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# from your president—

This year the American Society of Dentistry for Children will emphasize a closer liaison between it and its component Units to stimulate greater State Unit activities. The necessity for this cooperation became apparent from a questionnaire sent out last year to all Unit Secretaries.

An analysis of this query revealed among other things, the need of increasing our membership. Cognizant of this fact, the Membership and State Units Committee is about to launch a very ambitious membership campaign. An advertisement will be placed in an early issue of the A.D.A. Journal expounding the desirability of becoming a member of the A.S.D.C. A "cut out" application blank will be a part of the ad. The State Units will be informed of the applicants under their jurisdiction. It is urgently requested that the State Unit Officers support the program to assure its integration on a component Unit level. To further develop our membership program, Chairman Albert Anderson's Committee will soon contact dental schools to encourage Senior Student membership in the A.S.D.C. The potentialities of such an endeavor should be tremendous in the future growth of Our Society.

The questionnaire also disclosed the high esteem held by the membership for our Journal and the desirability of its prompt publication. Many factors complicate the publication of the Journal but Editor Alfred E. Seyler is making a concerted effort in this regard.

Charles Oxar, Convention Coordinator of the newly created Annual Meeting Committee, has been working constantly since the Atlantic City Meeting with the many problems relative to such an event. The Committee has selected as our convention hotel, one of Florida's newest and finest, The Balmoral, in the fashionable Bal Harbour area of Miami Beach. Make it a must November 1, 2, 3, to attend what promises to be one of our best conventions.

LAWRENCE R. BURDGE

# The Unconscious Castrative Significance of Tooth Extraction

HARVEY A. LEWIS, M.D.*

*Editor's note:*

*I recommend the enclosed paper for publication in the J. Dent. Childr.—for a number of reasons. I fully realize that it is very unusual to publish a paper of such deep analytic meaning in any medical or dental journal. It is customary to refer these to Psychoanalytic Journals. This results only in a further education of the Psychoanalyst—to whom this material is already partially familiar. The significance of the tooth as a phallic symbol and the meaning of tooth extraction as a castration symbol in postmenopausal women and in children is well accepted by psychoanalysts. Such publication would only serve to further educate an already educated group.*

*I believe that we should seek education for the dental profession. Surely, the pedodontist is now aware of the importance of the emotional problems in his patients. I firmly believe that he is ready and even eager to explore and to learn more and more about the psychologic and psychiatric aspects of dentistry for children. He receives no training at all in psychiatry in dental school. Perhaps that is the function of the post-graduate literature? In fact, I believe that the most significant advance in the practice of medicine or dentistry which has occurred during the last 10 years, is the recognition that we are dealing with human beings—with people who have feelings and emotions—and who come to us for help. A patient is not a "diseased liver" nor a "non-functioning kidney" nor a "diseased tooth." Each tooth is attached to a person. And the reaction of the tooth to the treatment depends a great deal upon how the total person is treated.*

*Dr. Harvey Lewis is an unusual psychoanalyst. He became interested in the significance and meaning of the teeth to his patients, thus reversing the usual trend. He has compiled an enormous amount of overwhelming evidence to show that the* teeth have deep psychologic meaning, *to the normal as well as the disturbed person—to children and to adults—to society and its culture.*

*For all these reasons—and more—I recommend publication of this paper in our journal. I know that many will read this and reject it. I know that an equal number will read and profit greatly from its message.*

MAURY MASSLER

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THE purpose of this paper is to explain some of the unconscious feelings that patients may have in relation to their dentists. These are more or less "built in" reactions, brought unconsciously by the patient to the dental setting. It is reasonable to believe that if some of these unconscious attitudes were better understood, the dentist would be better equipped to handle the emotional vicissitudes of his patients. This in turn would enhance his own value as a dental therapist, for one cannot treat a patient who, because of deep-seated anxieties (castration fears and others), avoids dental treatment or runs away after starting it. Of all the "built in" responses which patients bring to the dentist, there is no

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more constant and predictable one than the unconscious response to *dental extraction*. Almost all patients approach this ordeal with anxieties and fears which this paper will attempt to prove are deeply rooted and spring from the basic castration fears acquired during childhood.

In what follows, the personality of the dentist will be left out of the picture. Like all surgeons, the dentist has his own unconscious motivations for his choice of a profession, and it is well to know that sometimes unconscious, but poorly repressed forces may interfere with his proficiency as a dentist (2, 41). However, we will assume that the dentist is an understanding individual who is sensitive to the fears and hopes of his patients and is capable of enough flexibility to adapt himself to their different reactions (42).

## Method and Material

Information concerning the reactions of the patient to the dentist and to dental procedure is obtained quite fortuitously through the psychoanalysis of numerous patients who have reason to visit their dentists during the course of their psychoanalytic treatment, and as such, this knowledge is a valuable and useful by-product of the analysis. It even has the claim of greater scientific objectivity than might be the case if the patients were chosen for psychoanalytic study in order to discover their responses to the dentist, were this possible, for such efforts could be suspected of suggestion and bias.

Human beings are subject to powerful fears which often never reach consciousness, of which the fear of castration and of rape are outstanding examples. These two fears prove to be powerful determinants of male and female responses to tooth extraction. Patients in analysis reveal these fears specifically. The same patient might not become aware of these fears if not in analysis. Many dental patients show these fears openly. They probably need analysis and are not getting it. The dentist often witnesses fears which he can diagnose on the basis of what follows, but it is more likely that he will more often be aware of the patient's fear without knowing its specific content.

Castration fear in relation to dental extraction will be demonstrated by the presentation of case material from both personal practice and classical examples published in the literature and authenticated by the experiences of other analysts.

## The Dentist as a Father Figure

Inasmuch as a discussion of Freud's discoveries and how these gave rise to various theories and practices might lead us too far afield, we will mention only a few of the most pertinent unconscious mechanisms which play a part in the relationship of the patient to his dentist. In the first place, the patient will for the most part unconsciously react to doctors on the basis of his or her sex, as the patient once reacted to his father or mother. This statement must be qualified for the dentist, however. In the United States there are so few professional women in comparison to men that even if the dentist happens to be a woman, the patient may react nonetheless as if the female dentist were a father figure. After a lifetime of hearing stories or seeing cartoons about the dentist in which he is always represented as a male figure, and because nearly all present-day adults went originally to male dentists when they were children, patients tend to react to female dentists as if to a male prototype, which indeed the dentist is.

## Castration Fear in the Male

*Case 1*: A thirty year old man with very great castration anxiety came for psychiatric help because his wife threatened to leave him due to the absence of sexual

gratification. He related that when he turned over in bed with the thought of sexual relations, he sometimes had an orgasm upon merely touching her. A series of three consecutive visits will now be recounted. During the first visit, he told the analyst of his dentist's insistence that a dead, carious premolar be extracted. The patient strongly opposed this since the dead tooth was asymptomatic. The patient said his greatest worry concerned the anticipated pain after the local anesthetic wore off.

The dentist prevailed, however, and when he appeared for his second visit, the tooth had already been extracted the day before. He expressed amazement at the absence of pain after the local anesthetic wore off. He reported that the night before the extraction he noticed a loose button on his coat and was unaccountably disturbed by it. This was the stimulus for his first dream in treatment. He dreamt that the dentist told him the tooth would not have to be extracted after all, and he awoke with a feeling of great happiness. In associating to the anxiety about the loose button, he likened it to a penis, which might become detached. (This is a common association to a button, which is a classical phallic symbol inasmuch as it goes in and out of a hole and has the function of uniting two parts.) He also identified the button with the dead tooth (dead, impotent penis) which was to be "detached" the next morning. The meaning of the dream therefore, was a reassuring one, that despite his fears the dentist would not castrate him. From the psychoanalytic point of view, it is well established that only a very great fear of castration would necessitate such a strong defensive denial.

On the third and next visit of this series the patient said that after leaving my office *the tooth began to pain him.* He tried to keep at his job during the day, but the pain made this impossible, so he gave up and went home. He spent the rest of the day and night putting ice on the tooth to ease the pain. After he had mentioned this tooth several times, he was asked which tooth he had put ice on, and he became confused and realized that he had been referring to the extracted tooth. At this point the realization that he had experienced the tooth extraction as a castration came home to him with considerable effect.

This man actually had phantom tooth pain. The psychopathology involved here is the same as that in all phantom limb experiences; the individual is so fearful of castration that he would rather hallucinate the painful presence of the absent extremity than face reality, since the latter unconsciously represents an actual castration to him (28).

It is clear from this one case that the male may regard extraction of a tooth as castration, and the agent who does the operation—the dentist—as a castrator. In this context, the dentist replaces the father, from whom the patient feared castration when a little boy. At this time it becomes necessary to trace the origin of this unconscious transference of the role of castrating father onto the dentist by studying its origin in the Oedipal conflict during childhood.

*Case 2 (from Freud)*: The first, and to my knowledge still the most complete case history of the analysis of a small boy with a phobia due to the fear that his father would castrate him was published in 1909 by Freud (18). Freud supervised the boy's physician father in the treatment of Little Hans, who was four years and nine months old when the phobia developed. The phobia took the form of a fear that a horse would bite him if ever he ventured into the street.

The father's notes luckily began when Hans was not quite three, at which age

he asked his mother if she had a widdler (penis). At three and one-half, the mother found him with hand to penis. She threatened to have Dr. A. cut off the penis, asking Hans, "Then what'll you widdle with?" The answer was, "With my bottom." Hans later noted joyfully at the zoo that the lion had a widdler, and at three and three-quarters, when he saw water being let out of a steam engine, said the engine was widdling, but he could not see its widdler. He later asked to see his father's penis, and then told his mother he expected her to have one as big as a horse, since she seemed to be so big to him.

His major trauma occurred at three and one-half, when his sister was born. He scornfully denied her importance by saying, "But she hasn't any teeth yet," and decided this was the reason why she couldn't speak (p. 154). This is significant in that loss of the speech function is itself a common symbol of castration (7). Seeing her at one week of age in her bath, he commented, "But her widdler's still quite small. When she grows up it'll get bigger, all right."

This phobia developed over one year later. He became fearful that a horse (a symbol of the father) would bite (castrate) him if he ventured into the street. As the therapy continued, the genesis of the neurosis came clearly to the surface. It consisted of Little Hans' wish to kill and castrate the father in order to take sexual possession of the mother. Hans told his father a dream he'd had: "The plumber came, and first he took away my behind with a pair of pincers, and then he gave me another, and then the same with my widdler." He said the new behind and the new widdler were bigger, like Daddy's, and added, "Yes, and I'd like to have a mustache like yours and hairs like yours." The phobia abated when Hans was helped to see that his fear of being bitten (castrated) by the father (who was represented in the phobia by the displacement figure of the horse with its comparatively huge penis) was really a fear of retaliation for his own impulse to do the same to the father.

This case is the first one published in which the Oedipus complex and its attendant castration impulses and fears was observed and analyzed *in statu nascendi*. It makes excellent reading, and is recommended not only for its clinical value and the insight it gives into children's theories of sexuality, but also because it is a classical example of Freud's masterful expository style. Other examples of the Oedipus complex in myth and legend from ancient (24, 25, 39, 44) and primitive (3, 6, 10, 36) sources are given to illustrate castration fears and fantasies.

*Other cases*: Edith Sterba reported the treatment of a little boy of two with strong castration fears (46). Following a tonsillectomy he reported, "I dreamed of a bad man who hit me on the cheeks, so that my teeth fell out." Later he dreamed, "Bad men did something to me. They wanted to cut off my nose and pee-pee." It is clear that little George experienced the oral trauma of tonsillectomy as a castration, but could not directly represent the fear of losing his penis in the first dream. He had to approach it symbolically through the loss of his teeth. After having done this, he could then dream directly of having his "pee-pee" cut off by the bad men. The surgeon who removes tonsils or any part of the body is always such a "bad man," for all bodily parts may be unconsciously identified with the penis. The dental surgeon who extracts a tooth is also such a castrator.

This is further illustrated by the work of Jessner et al. (26) who studied the response of children to tonsillectomy. They wrote, "Some children regard the tonsils

as analogous to the teeth. They expressed a desire to be paid for the tonsils just as for their teeth and were resentful when no payment was forthcoming. Some expected a second set of tonsils to appear, like teeth." There are many varieties of castration trauma and fear and many interesting papers on different aspects of this subject (15, 22, 23, 35, 40, 43, 45, 47).

The representation of loss of a tooth as loss of a much more important part of the body, the penis, is rooted in biology. This is true not only of the human, but of the chimpanzee as well. Yerkes, a behaviorist psychologist and therefore far from a student of the unconscious, wrote of the chimpanzee at about the age of six (48), "The animals are greatly interested in a loose tooth or in one which has been shed, and commonly exhibit their curiosity by playing with it and showing or offering it to human attendants as if it were of very special interest. The behavior makes one wonder whether they merely sense the unusualness of the event, or in addition, are disturbed by a dim apprehension that all is not well, since a part has unexpectedly been separated from the whole! One suspects that the same sort of behavior might be displayed if a finger, toe or nail dropped off for no apparent reason." The organ which Yerkes is really comparing to the tooth is the penis. This can be proved further by analysis of the similar situation in the human male at the same age.

For years Dr. Maury Massler has been called by first grade teachers in Oak Park to attend panicky six year old boys with their first loose tooth. Their teachers report a marked behavior change in these boys; their deportment deteriorates, they lose control of their aggressions and they volunteer that they have been having nightmares. The remedy worked out by Dr. Massler is to tie a string to the loose tooth and place the other end in the hand of the boy, so that the latter pulls it himself, thus avoiding placing the dentist in the role of the castrating father. Usually there is marked euphoria after the tooth is out, the boy denies the visiting dentist played any role in removing it and the teacher subsequently reports that the boy's behavior has returned to normal (34). This reaction is clearly a manifestation of castration fear. The reassurance that another tooth will replace the lost one, and the calm demeanor of the dentist, help the child to pass through the crisis.

*Repression*: It is to be noticed that whereas we began with the study of an adult, we have reached the point of reporting similar responses in a boy under six years of age. There is a reason for this: *the unconscious of the adult is filled with those experiences, emotional reactions and fantasies of childhood which have been repressed.* When a fearful experience or event has been repressed, it is relegated to or imprisoned in the unconscious. Once there, however, it is by no means buried, in the sense that it is inactive or dead. Quite the contrary, for what is repressed in the unconscious is very much alive, and just like any prisoner, is always struggling to "get out" or reach conscious expression. If the repressive forces are strong, the repressed fears, affects and experiences remain so effectively cut off from conscious awareness that they *appear* not to exist.

It has been shown that in the male, the prospect of having a tooth extracted is viewed unconsciously as if not only the tooth, but the penis were threatened with loss. One suspects that this may be because tooth extraction in childhood is viewed as if it were castration. Even the spontaneous exfoliation of primary teeth is not the innocuous event which adults seem to regard it. In the male child, shedding of a tooth arouses apprehensions

and fears of castration which are deeply rooted, but thoroughly repressed (30).

### Genesis of Tooth Castration Fears

Teeth begin to be shed at the height of the childhood period of masturbation. As is well established, masturbation is indulged in with hostile fantasies of castrating the father and obtaining his bigger penis with which to approach and gratify the mother as the father does. It was Freud who first pointed out the close similarity between masturbation and tooth pulling, the expression for masturbation in German being "pulling one down," or "pulling off" ("jerking off," in America). Extraction of a tooth, whether by forceps or through shedding, therefore becomes (by displacement) a process of castration, a retaliation for the fantasies during masturbation (30, 38). Thus, dreams in which the dreamer himself or the dentist pulls a tooth out of his mouth regularly stand for, among other things, the fear of castration as a punishment for masturbation (14, 16, 19, 20).

We are now in a position to understand the relation between the extraction of a tooth or the spontaneous shedding of the teeth in childhood to: (1) the castration fear which this mobilizes at that time; (2) its relation to the masturbation fantasies of castrating the father and possessing the mother; (3) subsequent mobilization by tooth extraction in the adult of the castration fears lying dormant and repressed since the age of six; and (4) identification of the dentist with the father image. Three cases demonstrating this complex relationship in the adult will now be presented.

Dreams are one of the most effective means of exploring the unconscious, because the defenses are lowered and repressed feelings and thoughts become manifest—usually symbolically. The analyst can then interpret the true meaning of the dream and thus explore the unconscious feelings of the patient.

Rank (38) published the case of a man who had the following dream: "I dreamt that a dentist is drilling one of my back teeth of my lower jaw, until the tooth became useless. Then he grabs it with the pliers and pulls it out with a playful easiness which surprised me. He says I should not think anything of it because this is not at all the actually treated tooth, and he puts the tooth on the table; this tooth (as it appears to me now, was an upper incisor) falls apart in several layers. I get up from the dentist's chair, I move curiously closer and interestedly ask a medical question. The doctor explains to me while he separates the individual pieces of the strikingly white tooth and pulverizes them with an instrument, that this is related to puberty and that the teeth come out so easily only before puberty. For women, this decisive moment is childbirth. I noticed then that this dream was accompanied by an ejaculation; most probably this happened still during the pulling of the tooth."

I will not give the rest of the dream or the lengthy associations here for lack of space, but will confine myself to a few essentials. The patient said that he was actually under dental care and suffered continuously from pain in the tooth in the lower jaw which is being drilled in the dream. On the morning of the dream the dentist suggested that another tooth, a just-emerging wisdom tooth near the treated one, would be pulled because the pain might be emanating from it. Also important, on the afternoon of the same day, the patient had excused himself from a rendezvous with his lady because of a bad mood resulting from the toothache. He later associated that he knew the vulgar expressions "to pull off oneself," or "to

pull down on oneself," which were familiar to him from early youth as denoting masturbation. He ended by saying, "I shall only add that the ease with which the tooth came out, which in the dream changed to an upper incisor after being pulled, reminds me of one occasion in my childhood when *I pulled myself*[1] *a loose upper front tooth* easily and without pain. This event, which I still remember today in all its details, falls into the same early period to which my first conscious masturbatory attempts belong."

Here, in this dream and its associations, are united all of the relationships which were brought together just before introducing Rank's case report. As a boy the patient feared retaliatory castration from his father because of his own hostile impulses toward the father and his sexual wishes for the mother; these fantasies accompanied the masturbation. The hostile and sexual wishes remained repressed, but reveal themselves in the dream as the memory of pulling his tooth during the period of childhood masturbation, for there is an orgasm in the dream when the tooth is pulled. The tooth changes from the one the dentist is working on to the incisor pulled by the patient in his childhood. The dentist's (the father figure's) suggestion that a wisdom tooth be pulled was interpreted by the patient as a threat. He therefore called off a tryst with his paramour that very afternoon, giving the aching tooth as his excuse. These day residues and his early childhood experiences combined with each other to produce the dream which was related. This case clearly demonstrates that the castrative significance of dental extraction in the unconscious of the adult derives from and is identified with the shedding of primary teeth during the period of childhood masturbatory activity.

Another demonstration of the close relation between castration fears and the shedding of teeth in childhood is given by Farrow (12). This layman heard of castration fear and realized he suffered from it. However, he was unable to enter analysis because he dreaded the implied passivity on a couch and decided to psychoanalyze himself. He began this attempt by writing down his free associations for hours on end. In this way he succeeded in recovering a memory from about the age of seven when he pulled out a loose, primary incisor. That night he had a dream stimulated by this recollection, in which he took hold of something in the back of his mouth and removed it between two fingers. It then took shape and seemed slightly alive, reminding him of an amphioxus about six inches long with a fish's head faintly outlined at one end. He threw it to the floor, awoke, and experienced horror at the realization that the fish's head represented a penis. There flashed into his mind the vivid recollection of having seen a butcher chopping meat with a cleaver. His associations eventually led to an incident in his childhood, prior to the shedding of his teeth, when he was sadistically punished for exposing his genitals to the maid. The latter and a cousin held him down *on a couch* and exposed his genitals, one holding a pie dish underneath to catch them while the other made threatening motions with a snapping scissors, so that he promised in terror never to expose his penis again. The recovery of this memory makes it clear why he could not lie on the analyst's couch.

Probably no more realistic threat of castration could return from repression in the unconscious mind following the stimulus of a tooth dream than in the case just

[1] The German idiomatic verb used here for pulling his tooth is identical to the vulgar one used to describe masturbation. The italics are mine.

cited. For a fuller account, Farrow's book may be consulted (13), but I would like to call attention to the contrast of the dreams reported by Rank and Farrow. In Rank's case, the dream of having a tooth pulled led to recall of pulling his own primary tooth during the period of childhood masturbation. In Farrow's case report about himself, the conscious recollection of pulling his tooth in childhood stimulated a dream on the same night which recovered from repression a vivid and *real* castration threat.

Lowenstein (33) published a case, also related to the shedding of primary teeth, with strong castration anxiety which resulted in impotence. His patient had numerous castration dreams and fears which he never understood until analysis revealed its relation to the loss of his first "milk" tooth. He was then helped to see that the reassuring fantasy from that early period of life, to the effect that he'd always have teeth because others would replace the smaller ones which fell out, was really a reassurance that he'd always have a penis.

Ferenczi (14) posited long ago that the reason why the loss of teeth sometimes becomes so suggestive of castration to the little boy may be, apart from other considerations, a temporal one. Fear of castration and falling out of the teeth occur at approximately the same time and are the first operative interventions with which the child is threatened.

In a separate publication (30) it has been shown that the ubiquitous rituals employed by primitive and civilized cultures when the first tooth is shed reveal a strongly rooted fear of castration. When the boy appeals to the mouse (or some other figure) (27) for a newer, bigger, better, harder or straighter tooth in place of his baby tooth, he is unconsciously asking the father for a big penis like his. In just one instance that I have found, that of the Kiwai Papuans (29), the father and/or his penis are not symbolized by the mouse or some other rodent, but appealed to directly and without disguise. The boy buries his tooth just under the surface of a (fore)father's grave and calling upon him by name says, "I give you old tooth, you give me new tooth." In America, the Tooth-Fairy is the object of appeal, but *hard* money rather than a new tooth is requested. This is quite a logical cultural development in a country where (hard) money has largely replaced personal strength as a symbol of masculinity.

*Conclusions:* It has been demonstrated that early child castration fears are displaced upward to the teeth; and that the basic cause of castration fear is due to the fear of retaliation for the unconscious wish to castrate the father. One of the overdetermined reasons for the displacement to the teeth is that the child regularly fantasies obtaining the father's penis by biting it off (19, 20). Consequently he fears the father's revenge upon the organs of this aggression—his teeth.

The dentist regularly replaces the father as the feared castrating male in a position of authority (5, 32). Only this fact can explain why boys and men fear the dentist so greatly and often break their appointments or allow dental pathology to go uncorrected for so long. Masculine types of women and many female children behave the same as men, and we shall now attempt to understand why this is so.

## Castration in the Female

To one not acquainted with the unconscious, the idea that both sexes unconsciously consider the female a castrated being may seem not only unfamiliar, but novel. Yet, as Freud once remarked (17), nothing would so forcibly attract the attention of someone from another planet

than the existence of two sexes amongst human beings who otherwise resemble each other so closely. This is especially true in childhood, of course, when the little boy and girl are identical except for the penis. In a series of important papers (16, 17, 18, 19, 21, 22, 23), Freud originally stressed that the little boy does not at first remark on the *lack* of the little girl's penis when he discovers this, but consoles himself with the thought that it is just little and will grow (17, 18). The boy is so proud of his organ, which is so changeable and excitable, that he wants to compare it with everyone else's (and often does!). Eventually he discovers that the girl has none. This gives him the idea that he could lose his too. This lends reality to the castration fears which arise in the course of the Oedipal conflict with the father. However, he gives in only grudgingly to the fact of the absence of the penis in the female and consoles himself with the fantasy that only those women he has seen exposed, or those he does not respect, have no penis (21). Eventually, the absence of the female's penis convinces him that he may lose his own (22) and the Oedipus complex succumbs to repression and undergoes a compromise solution.

The *"Castration Complex" in Women:* When the little girl compares herself with the little boy she feels that she has "come off short." She may then console herself with the expectation that her clitoris will grow into a penis, but here her masculine complex branches off. She assumes that she had one at an earlier time, but lost it by castration (22). The irresolution of the little boy is not shared by the little girl. Freud said of her (23), "She makes her judgment and her decision in a flash. She has seen it and knows she is without it and wants to have it." This leads to a sense of inferiority, to competition with men, and sometimes to sharing their contempt for the "weaker sex" which is without a penis. Abraham (1) has written a brilliant study of the castration complex in women, which is important to any reader who wants proof and knowledge of the manifestations of penis envy and the castration complex in the female.

It was shown that in the case of the boy, the identification of castration with dental extraction is solidified at the time of shedding the first primary tooth (a shed tooth is also an extracted tooth to the child). The girl, as well as the boy, experiences the shedding of teeth in childhood as a castration, fixing this identification in her unconscious mind. This will be demonstrated from clinical material in two young girls, and two adult women.

*Case 1:* A young girl came to my attention who had demanded a present upon every possible occasion, from the age of three to six. On her birthday, at Christmas time, and on other occasions when presents were given to her, she threw them away contemptously and demanded a penis. She was not only adamant, but inconsolable. All of this changed when she shed her first tooth, which gave her the feeling that now she really was castrated and her uncompromising attitude was hopeless. She then changed her request from a penis to a lipstick, and received one of the latter for each tooth all through the period of mixed dentition. The psychoanalyst recognizes a clever compromise here. The mother thought her daughter had finally given in and accepted her femininity. This is true only on a superficial level; on a deeper and more unconscious level, behind the facade of femininity, the girl made up for each successive "castration" by obtaining a functioning penis. The gift of the lipstick

with its red tip going in and out of its golden shell, like the rutilant glans penis in its paler prepuce, symbolically gratified her wish for a penis twenty times over during the course of shedding her primary teeth.

*Case 2:* One of the psychoneurotic end results of the woman's desire for a penis is found in kleptomania. The object which is stolen is almost invariably an obvious symbol of the penis itself (or its unconscious equivalent, a baby). Chadwick (8) reported a case in a ten year old girl who had suffered from kleptomania for five years. At first the coveted articles were *pins*, especially those with *glass heads*, and *pencils* and other small objects belonging to her *father* or *brother*, as well as *pennies*. (At the risk of being redundant, I wish to point out that these articles not only bear a morphological resemblance to the penis, but that the names of all these objects are derived from a common root and sound almost the same.) The first trace of the patient's habit of hiding things in her bed was found *after losing a tooth*. She liked pulling them herself, but kept them with an almost primitive fear lest they be lost or injured (p. 303). When her fear of castration and its core, penis-envy, began to take shape, she spoke of her pencil which she hoped would always stay the same size. While in treatment, she *lost a tooth* with considerable hemorrhage, and then described how much she had cried when her curls were cut off (p. 306). The significance of castration is obviously behind this girl's tears over having her hair cut off, and the event which she associated to it—the loss of a tooth while in treatment—must therefore have had the same meaning. The best-known castration story associated with the cutting of hair is that of Samson, who was weak and helpless (castrated) while his hair was short, but who regained his strength when his hair grew long again.

*Case 3:* Eisenbud (9) reported the case of a female patient who had a series of dreams in which the central theme was her unwillingness to accept her lack of a penis. "In the first of these dreams she had a broken front tooth, and her angry feeling in the dream was that whereas other women might make the best of such a defect, she was not going to put up with it." In this instance, the broken tooth clearly stood for the broken-off penis, without which, as a woman, she felt castrated.

*Case 4:* The most complete representation I have found in the literature of the feelings of castration in the female as symbolized by the teeth, is to be found in a paper by Blanton on Phallic Women (4). He analyzed a very feminine-appearing woman whose life was nonetheless dominated by penis envy. After much work, a change in her attitude, with acceptance of her femininity, was confirmed by the following dream which exhibits most remarkably the symbolism we have been describing. "I was much concerned over a tooth, a tooth that was being fixed. I wondered if the cap were coming off. I looked and the cap had not slipped off. However, all my teeth were pink and soft. They were still shaped like teeth, but they were only mucous membrane. Mother looked in my mouth and said, 'The enamel is all worn off. You must go the dentist and get your teeth fixed.' But I was not at all disturbed over my pink teeth, and I said to myself I would not go to the dentist."

The tooth represents the wish for a penis which brought her to analysis, and the analysis itself is symbolized by the tooth "being fixed." This dream demonstrates the effectiveness of her acceptance of a pink mucous membrane (vagina) in

place of her wish for a hard, penetrating penis (tooth), and that through her analysis she no longer feels that being a woman means being castrated.

*Dental Extraction in the Female as a Sub-conscious Rape:* There is one further point to make about young girls and women. They often react to dental extraction as if it were rape. So sexualized is the oral cavity during childhood and especially just before and during puberty, that introduction of instruments into it and bloody trauma to its tissues is easily understandable as a sexual assault. The sexual nature of the mouth is illustrated in a study of frigid women, by Lorand (31). He analyzed a woman who expressed her vaginal aims on a purely oral level. As sensation began to be awakened in her body, "She also experienced a remarkable series of sensations in her mouth, teeth and speech. At times she awoke at night with pains in her teeth which her dentist could not explain. As she put it: when she came to analysis, she had no vagina at all, she was not aware of it. Now she was all vagina. . . . she felt she was being destroyed with desire. She wished for perpetual intercourse. Incidently she was notorious for her prodigious appetite and constant eating."

If the mouth can so readily function as a vagina, then certainly the manipulations of the dentist can be experienced as sexual activity. This can be documented at length, but the above case was cited only to give enough background for validation of the experiencing, especially by young girls, of dental extraction as rape. Behind the *fear* of rape is again, the castration complex in women. Loss of the hymen is equated by some women as loss of the penis, and the bloody cavity resulting from forcible entry (bleeding vagina = bleeding tooth socket) is experienced as castration. Actual clinical experience in dentistry confirms the fear of rape which attends tooth extraction in little girls.[2]

## Discussion

The expected reaction in anyone reading material of this kind for the first time would be surprise and doubt of its validity. A healthy skeptic would probably say that such reactions may occur in neurotic, sick people who have to be treated for their emotional problems, but that "normal" people would not react this way, as experience with their "normal" patients proves. I do not think that such an attitude is contrary to what I have said here, for such a skeptic is speaking from *conscious* experience and is correct insofar as his knowledge goes. The dentist usually has no way of knowing what goes on behind the defensive facade of his patient. The patient himself does not know that his response is dictated by castration fear. *This is unconscious* and usually can be reached only in the setting of psychoanalysis.

The dentist is not trained to, nor does he attempt to recognize the subtle clues which escape the patient's powerful defenses. However, the analyst can see into the unconscious meanings of teeth and of dental procedures in his patients, because

[2] Dr. Jean MacFarlane pointed out to me that the greatest fear of rape, expressed as fear of having the dentist enter the oral cavity (to drill or to pull a tooth) occurs in prepubertal girls at about 9 to 11 years of age. "I have often seen my patients undergo a metamorphosis from a dentally compliant and cooperative girl patient at 8 to a suddenly hysterical and fearful one at 10 years of age. They obviously react to the placement of the familiar hard instruments into their oral cavities as if this procedure were an attack—by a male. It is quite striking! I have also seen these little girls grow up and "get a crush" on the dentist so that I had difficulty getting young and susceptible dental students to discharge them." (34)

he knows what was going on in the patient's unconscious *before* the dental appointment and can therefore better understand the associations and dreams which are brought to him *after* the dental visit. The patient really makes this quite easy for the analyst, for he often represents the analyst as a dentist, in his dreams, even when he is in no need of dental treatment (32). This is because he feels that the analyst pulls things out of him against his will, just as the dentist does, so that the identification is made in both directions.

There is another objection which should be answered here. The dentist may claim that fear on the part of male patients may be based on past experience with a brutal dentist, so that his fear is logical. This is true, of course, but it does not explain the *degree* of fear which men often show. My own explanation would be that behind the justified fear was the freshly mobilized castration anxiety which the unfortunate traumatic experience brought back from repression in the unconscious into the stark and frightening world of conscious reality.

Objective validation of these clinical findings is fortunately at hand in the work of Farber and Fisher (11). They performed some important experimental studies on dream stimuli. College students were chosen as subjects and told only that two psychiatrists were doing research on hypnosis. The subjects were between 18 and 21 years of age and were chosen for their mental stability; any who appeared unstable were immediately excluded. These young men and women were naive about psychology and ignorant of any knowledge of dream theory, and were asked not to read about this subject for the duration of the project.

As an example of their work, and to demonstrate how common symbols were readily interpreted by these subjects, an 18 year old girl was told under hypnosis, "Dreams have meaning. Now that you are asleep you will be better able to understand them. A girl dreamed that she was packing her trunk when a big snake crawled into it. She was terrified and ran out of the room. What do you think the dream means?" Almost before the question was finished the subject blushed, hesitated a second and then said, "Well I guess she was afraid of being seduced. The snake would be the man's sex organ and the trunk hers." As a control, subjects were always questioned about the dream before and after hypnosis, and in no instance did they, in the waking state, make any comments comparable to that obtained under hypnosis. No leading questions were asked and the experimenter's interpretations were not revealed.

The experiments bearing directly upon the theme of this paper were as follows: The male and female subjects were given the following dream stimulus under hypnosis. "A man is sitting in the dentist's chair while the dentist tries to pull his tooth. He pulls and pulls. The dreamer is in great pain when the dream ends." Several subjects said the dream meant that the man was having his "vital organ" cut off.

## Conclusions

It has been demonstrated by clinical material (in patients undergoing analytic treatment, in patients undergoing dental treatment while in analysis and by an experiment on hypnotized subjects) that dental extraction may be experienced as castration. This is true for the male or the female dental patient. The reasons for this are not hard to find.

1. It is well established that when the little boy and girl discover the difference

between the sexes, their personality developments are indelibly influenced by this finding. The little boy interprets the absence of a penis in the girl as evidence that she has been castrated and feels that by the same token, he may lose his penis as well. The little girl reasons similarly that she has been castrated or cheated, which feelings give rise to powerful envy of the male organ and a wish to obtain one for herself.

2. It has been shown, many times, that the powerful forces released in the Oedipus complex contribute to castration fear and re-enforce the threat of castration, as does the related masturbation and the fantasies which accompany it.

3. Castration fears are given the stamp of reality by the shedding of primary teeth in childhood. From this time on, these events become repressed, but case histories have been presented to show that dental extraction is experienced as an unconscious equivalent of castration in the adult psyche.

4. It has been shown that the mouth may unconsciously represent the vagina. Young girls may therefore experience dental extraction as sexual assault or rape.

Knowledge of castration reactions helps the dentist to respond with better understanding and skill, enabling him to use it as a clue to how to lessen the trauma. The best way to use such awareness of the patient's unconscious response to dental surgery in order to alleviate his fear would be to reassure him and to emphasize the improvement and better function he may expect when the work is finished.

It is hoped that these few observations may be of value to the dentist in helping him to understand some of his patient's untoward reactions. *Under no circumstances should interpretations concerning castration or sexual assault be made to such dental patients.* Rather, such knowledge should be used to render the handling of patients more flexible than would otherwise be the case.

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Abbreviations:
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Int. J. Psa.—International Journal of Psychoanalysis
Psa. Q.—Psychoanalytical Quarterly
Psa. Study Child—The Psychoanalytic Study of the Child
Stand. Ed.—The Standard Edition of the Complete Psychological Works of Sigmund Freud

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Office of the Mayor
CITY OF MIAMI BEACH
Miami Beach, Florida

To the officers and members of the
American Society of Dentistry for
Children and American Academy of
Pedodontics:

On behalf of the city government of Miami Beach, I wish to extend a most cordial welcome to the members of your organization on the occasion of your next annual convention to be held in our city, November 1–3, 1957.

Here you will find everything you desire for your convenience, comfort and enjoyment in a picturesque, tropical setting.

We hope you will enjoy to the fullest the genial hospitality awaiting you and the program planned by your local committee for your entertainment. You may be sure that the city government of Miami Beach and the convention bureau will do their utmost to see that your convention is a high point in your organization's history.

Sincerely,
D. Lee Powell
Mayor

# A Digest of the Practice of Pedodontics

## Part Two

SAMUEL D. HARRIS, D.D.S.

*Editor's note:*

*At long last we present herewith, part II of Dr. Harris' digest of pedodontics. (Part I was published in Volume XXI-1954.) Many replies were received to our questionnaire printed with the final installment of part I of Dr. Harris' work. Following are excerpts from some of the comments: Abadie—easy to understand; Barley—good thinking; Barker—valuable reference for general practice; Bibby—I like organization; Bierman—readers should benefit; Binstock—excellent in its entirety; Boyd—common sense approach; Brown—excellent; Burdge—excellent work; Cheyne—lots of meat; Chuljian—many operative suggestions of value; Clayton—wonderful sorting of the important material; Cody—I picked up some good pointers; Coleman—good; Corley—should go to every dentist; Cohen—presentation wonderful; Davis—should be in every dental library; Donnett—most practical; Erwin—buoyed to know my practice is in line with respected practitioners; Finck—easy to read; Fleming—timely; Foster—of great benefit, Geer—interesting; Gibbs—enjoyed very much; Gold—text very good; Goode and Granna—we want the book; Guest—dandy; Hagan—idea fine; Higue—commendable; Hogner—lots of good; Humphrey—summary good; Jennings—congratulations; Kauffmann—great job; Kelner—by a practitioner for the practitioner; Klein—should be in every general practitioner's office; Korns—fills real need for ready reference; Lloyd—down to earth; Lampshire—good for pedodontics will result; Luten—enjoyed it; Mann—finest ever read on pedodontics; Martin—fills long wanted need for family dentist; McBride—like experience version of practice; Miller—only praise; Mehlum—especially helpful to young dentists; Olson—appreciate helpful text; Ostheimer—wonderful project; Peabody—benefited; Russman—commendable effort; Selbe—many helpful hints; Siebert—valuable for any dentist; Simmons—contributed lot to my practice; Smith—should be extremely popular; Straus—definite need; Tapper—idea terrific; Teutsch—experience wonderfully recorded; Thompson—similar to way I do it; Tobin—will encourage dentists to treat children more than any other work to date; Waggoner— excellent job; Wood—much impressed; Wisan—would like thirty copies; Van Nostrand—very good.*

*Many constructive comments and criticisms were received and it is from such replies that this part II is based.*

A. E. S.

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## Preface

MAY I say to the large number of family dentists and pedodontists who contributed to this book that I am most grateful? Many expressed approval of part one, some graciously offered points of difference. I hope I can pass the many good ideas received on to the reader.

I am grateful, too, to Ken Easlick and Maury Massler for reading and commenting on the manuscript for Part Two. The large number of quotations that have no reference number are from personal correspondence. The bibliography at the end of each chapter contains numbered references which are quoted material and unnumbered references which were found equally interesting and useful.

## CHAPTER I

# When and Where To . . .

THERE are 93,726 dentists in the United States (17,416 now in the federal service). This is one dentist for each 1800–1900 people, a ratio which has prevailed for the last fifteen years. Yet, during this same period, the ratio of dentists to children has been slipping. For example, in 1940, there was one dentist to three hundred children under nine years of age. Today, with the increased birth rate, the ratio is one to four hundred. Thus, there are fully one-third more children for each dentist.

Actually there are less than eighty thousand dentists in private practice to serve 48 million children under fourteen—a ratio of one to six hundred. By 1970 the ratio of dentists to children will likely be even smaller (Figure 1), for the estimated increase in our population under 14 will be 77 % (over 1940), while our increase in population 14 and over is 47 %.

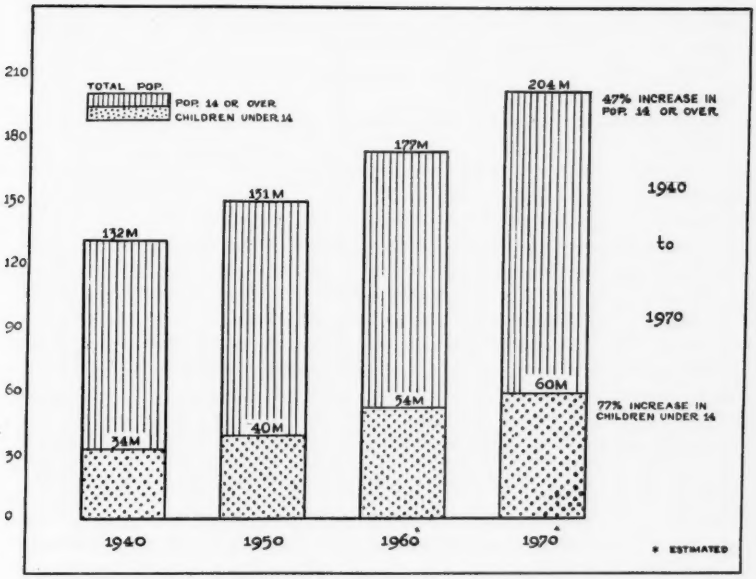


FIG. 1: United States Population Through 1970

Let us briefly analyze the element of today's pedodontic supply. Of each one thousand dentists not in the service, perhaps less than one is devoting himself to pedodontic research; less than two, to pedodontic teaching; and less than three, to pedodontics as a specialty in practice. Fourteen are listed in public health service for children. This leaves nine hundred eighty, with some few exceptions, in the general practice of dentistry—family dentists who can and, in rapidly increasing number, are undertaking to serve more children.

Pedodontic demand, the dental needs of children, is great. Records at the Guggenheim Clinic show that at age two very nearly fifty per cent have cavities; by five, less than one in twenty-five is caries free—fully sixty per cent exhibiting seven or more cavities.[1] This was confirmed recently by a Public Health survey of twenty-six states.[2] In spite of all we know and have done, dental disease is on the increase. Kulstad has placed this increase at 20% in ten years.[3] The result, shown by White House Conference, is that 74 per cent of our children never have any attention given the mouth or teeth.[4]

Specific avenues for control recommended by the Public Health Service[5] are:

1. Fluoridation of water supplies.
2. Topical application of fluoride.
3. Restriction of fermentable carbohydrates or refined sugar intake.
4. Tooth brushing immediately after eating.
5. Regular and periodic dental service.

Much is being done along these avenues. Public pressure and specific action by labor groups for dental service for children in the past fifteen years has increased conspicuously. This is due to enlarged public awareness of the strategic value of dentistry for children as a health measure. The public has become equally cognizant of the sizable savings in dollars that accompanies early and regular care of children's teeth.

In this period there has also become evident an increased interest on the part of family dentists in dentistry for children. The American Society of Dentistry for Children is fully five times as large as it was in 1940. I believe that it has become the largest dental auxiliary in the world. The presence of over a thousand dentists, milling eagerly around sixty-two pedodontic table clinics the Sunday prior to the opening of the 1955 American Dental Association meeting, further attests to the burgeoning interest of family dentists in dentistry for children.

There are many today who feel that the practice of dentistry for children has arrived at the point where it is as pleasant and as profitable as any phase of dentistry. Some are convinced that it can be the most satisfying part of a family practice. This reference book is offered as just one more vehicle to help propel us towards this promising goal.

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## CHAPTER II

# Child Management

A REALISTIC attitude is required to serve children best. The "do-nothing-to-frustrate-them" attitude of the forties was as ineffectual as the "switch-'em-good" attitude of the twenties. No control in child management has proved as detrimental as too much control. Today, we are arriving at a give and take point of understanding in managing children at home and in the office. Good management, and this sometimes means firm management, makes for cooperative and well adjusted children.

Tuma[1] feels that a child should be coolly and unemotionally considered when he misbehaves, praised generously when he is good. He cautions that praise should be heartfelt, not insincere and overdone flattery. He offers the observation that children develop respect for those who respect them. They welcome firm and consistent guidance in the job of learning to do what is best for all concerned. Children accept adversity well.

Fischer[2] has noticed that a child in a family that takes dentistry as a matter of course, that discusses it dispassionately and favorably, will not show the concern and fear seen in a child from a home where the details of dentistry are emphasized and a feeling of fear is reiterated again and again.

Bohlman[3] also states that it is important that the parent show no anxiety, as this is referred readily to the child. He speaks of a child's "comfort of authority", and suggests that children should be expected to live up to their developmental levels of maturity. They should not be treated as "little adults" or as "little babies".

Markey,[4] speaking for prevention of childhood distress, states that in the management of children, "... common sense may be uncommon". No one method of management can be applied to all children, for the individual defies predictability. Attempts to apply rules will fail if the rules are not modified to suit the given family and child. Also, the sooner the dentist establishes a relationship with the child in the absence of the parent, the sooner he can count on a good emotional transference.

The atmosphere in the dental office itself must be essentially calm and friendly without being oversweet. Sometimes reassurance may only stir the fear that something may indeed go wrong. The deepest influence stems from the essential friendliness of the dentist himself.

Ryan[5] says there is no form of therapy more potent than suggestion. The dentist who is successful in handling children avoids words with unpleasant connotations like hurt, ache, stick, cut, etc.[6]

Timing, in the opinion of Waterman,[7] is important. This is particularly true with younger children who are more subject to fatigue and attendant irritability. He denounces idly riding the child up and down in the chair and fashioning airplanes from cotton rolls as time consuming antics that contribute little or nothing to good behavior. It is his considered feeling that each child is entitled to complete treatment as quickly as possible.

Burdge offers these suggestions as aids to child management: The use of McBride's seat to more comfortably position the small patient, number 3 mouth mirrors. miniature contra-angles, shortshank burs, small saliva ejectors, and the Hanau dual control water syringe. He notes that the water control is intriguing to the child because the sound of water and air eliminates the sound of the bur and thereby contributes to more rapid and efficient dentistry.

Lloyd points out that he does not like Saturday appointments for children ". . . for the obvious reason that a child of school age, as a rule, does not like to take his day to come to the dentist." He states that we should encourage laymen to consider the importance of dental visits during school hours, for after-school appointments "do more harm than good as far as patient management is concerned." Organized effort by groups and committees of dentists has resulted in agreement in many areas and legislation in some states to permit school children to visit the dentist during school hours. Printed excuse slips are provided by the dental society to be signed by the dentist. These are accepted with full approval by the schools.

Consideration by everyone concerned is important in order for the child to establish and to enjoy a satisfactory rapport with dentistry. For the dentist, managing children successfully is a particularly gratifying experience. Fulton[8] calls it dentistry's greatest challenge. In his words:

> "If we try to be a consistent, steadying influence for the child, if we understand that guiding him through new dental experience usually will bolster his ability to make decisions and resolve conflicts in other situations, then dentistry for children can become one of the most satisfying aspects of dental practice."

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CHAPTER III

# Prophylaxis

ERWIN writes that rather than perform a prophylaxis at the outset, he tackles the most difficult dentistry first ". . . as a matter of expediency". He finds that this pleases parents who ". . . too often have been subjected to drawn out visits and puttering services by a dentist 'afraid to go to work"; however, he does do the prophylaxis first ". . . when no emergencies exist."

Erwin advises tooth brushing as frequently as the child eats. Aguier recommends that parents supervise their child's brushing up to age six. At eight, the child is ready for a brush with two rows of bristles, six tufts to a row; at twelve, a brush with two rows, seven tufts to a row.

Fosdick has shown the best time to brush one's teeth is right after meals—the sooner the better. By that means the fermentable carbohydrates are eliminated or neutralized before they can do much harm. Wood adds that some research workers feel that if the teeth are not cleaned within twenty minutes after eating, the brushing is of little value. Easlick contends this is a long way from proved.

Wood also encourages parents to give children raw fruits, celery, carrots, etc. at the end of their meals. These act as natural cleaning foods. This practice is a common one in India.

Easlick[1] suggests that parents can be shown the necessity for frequent prophylaxis by the dentist if a disclosing solution is used.

A pleasant tasting one can be prepared as follows:

| | |
|---|---|
| Bismark Brown | 3 grams |
| Alcohol | 10 c.c. |
| Glycerine | 120 c.c. |
| Oil of Anise | 1 drop |

For a polishing paste he likes:

| | |
|---|---|
| Flour of Pumice | 170.00 grams |
| Borax | 30.00 grams |
| Glycerine | 75.00 c.c. |
| Carmine | 0.25 grams |
| Oil of Spearmint | 1 drop |

Hagan finds the prophylaxis visit a desirable time to give the first fluoride treatment.

After a lifetime of service in pedodontics, Jordon stated, "No work that I have done has brought better results than prophylactic treatments . . ."

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## CHAPTER IV

# Examination

SMITH suggests a set of lateral jaw films and bite-wings for every preschool child and bite-wings every six months thereafter. Russman and Taylor take bite-wings every six months with anterior upper and lower occlusal films once each year. Others take only bite-wings annually. Wood states:

"Actually, we do not charge for bite-wings. It is just part of our examination. Cavities can develop rapidly in some children particularly during the teenage period."

Radiographs are an integral part of Bohlman's[1] examination because:

(a). Hidden caries is discovered.
(b). Resorption and eruption of teeth are observed.
(c). Anomalies, missing and supernumerary teeth, are detected.
(d). Abscessed teeth are detected.
(e). Growth, development, and calcification of teeth and bone can be seen.
(f). Alignment and spacing may be watched.

This is in line with his philosophy that no one wants a tooth treated needlessly or any tooth neglected needlessly.

We speak of the film packet as a piece of paper. Richards[2] speaks of the film packet as a white card that goes into the child's mouth like a cracker. He likes fast speed film because he feels it is more difficult for the child to sit still for the longer exposures. He applies what he calls the "fake take" technic going through the motions of shooting the first exposure with the film and cone positioned but with the current off. With the child now less apprehensive, he proceeds to shoot the other exposures normally.

We like to use radiatized film. These have a two and a half second exposure. We generally use the #0 bite-wing for the age child prior to the eruption of the first permanent molar, the #2 following its eruption and prior to eruption of the second permanent molar, and the #3 following eruption of the second molar.

The bite-wing packet is placed so that the front end of the film is located, in the case of the #0, at the mesial of the first primary molar; in the case of the #2 and #3, at the mesial of the first premolar. The #0 is used with its length vertical if we are interested in the periapical area, horizontal if we are primarily interested in the coronal area (Figures 2–5).

Mortell[3] points out that radiographs can be used to determine the operating space in the primary or permanent teeth since the mean difference between the measurements on the radiograph and on the tooth has been found to be statistically insignificant. Charbeneau[4] also determined that this was true with meas-

FIG. 2: Positioning the #0 film, vertical. "Deeper" view of primary molar area and relationship to permanent successors.

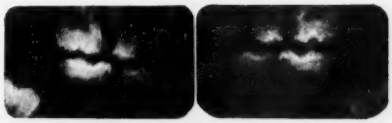

FIG. 3: Positioning the #0 film, horizontal. "Broader" view of primary molars and relationship to primary cuspid and permanent first molars.

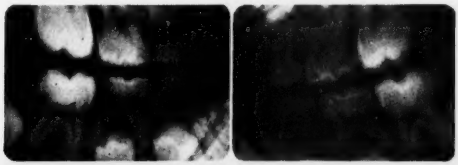

FIG. 4: Positioning the #2 film

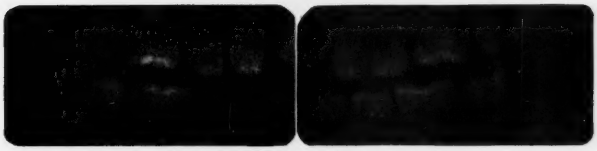

FIG. 5: Positioning the #3 film

urement of spaces. Those taken from radiographs on the average were .3% greater than corresponding measurements taken from stone models.

The findings of Mortell emphasize the essential value of radiographs to discover caries. Mortell reports in a radiographic study of 157 children that proximal cavities were the earliest to appear. Proximal cavities were evident in four teeth out of every five. They occurred on the distal surface of the first primary molar and on the mesial surface of the second, in the susceptible children, by six years of age. By seven or eight, cavities were present in four out of five cases on the distal of the second primary molars. Cavities on the mesial of the first permanent molars appeared a little later and almost as frequently. In this study over a thousand proximal cavities were diagnosed. While less than seven per cent were evident with only clinical examination, forty-five per cent were evident

with radiographic examination alone—almost fifty per cent by both. It is significant to note that *without radiographs, only one proximal cavity in seven could be seen.*

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## CHAPTER V
# Economics

Bilkey[1] writes in the Journal of Dentistry for Children:

> "Once each of us house cleans his mind of the 'temporary fillings' and 'leave-it and let-it-rot' attitude, and establishes an appreciation of preventive, early interceptive, and sound restorative procedures, it will become a simple matter to convince parents. In short, once we are convinced, it is a simple matter to convince the parent. I would illustrate with a true incident. When one ardently converted dentist was asked by a parent, 'Do you charge the same for children as you do for adults?' His prompt retort was, 'Oh yes! We do not charge more for children'."

Bilkey makes a sincere effort to be realistic in his economics. He discourages the parent's presence in the treatment room as time is often sacrificed to the parent's repetition of the dentist's requests, and to comforting verbal setbacks such as, "There, there dear, the doctor is almost finished." He even reduces to a minimum the presence of his assistant in the treatment room. It is his feeling that the presence of a third party breaks the bond of cooperative understanding between the child and the dentist.

In his practice the average child takes from three to five appointments or approximately two and a half hours per year for general dental services. He points out a salient financial advantage in dentistry for children, that laboratory and supply bills are considerably reduced.

The specific size of the fee for children's services and whether and when to quote it may, of course, vary with the individual practice. One of our Canadian colleagues writes:

> "Little time is spent in my office discussing fees. I practice the specialty of pedodontics in a district above average. In the last two years I have had only two complaints about fees. Now, I am not recommending that the family dentist should not discuss fees. It could be dynamite if he does not."

Wood always has the parent in at the end of the visit to demonstrate the services accomplished. He feels this is effective and appreciated. Lamons and

Morgan both feel, as do many others, that it is the difficulty of receiving an adequate fee that is still the greatest stumbling block to more dentists doing more dentistry for children. That this problem can successfully be met by the family dentist is supported by Brown's[2] experience.

"Dentistry for children in my practice shows a greater profit per hour with lower fees than any other branch of dentistry," and he adds, "I can cite factual evidence of a decrease in the yearly increment of dental needs."

In the consideration of what the average cost should be per child and the cost for each service, the following schedule of fees from the California, Oregon, and Washington State Dental Associations may prove helpful.[3]

"It is important to realize that this program was initiated by labor and management. Dentists are permitted to render care beyond the limitation of $75 per child, providing there is an agreement between the dentist and the parent that the parent pay for the additional treatment. It should be said here that no distinction was made in the value of treatment of primary teeth and permanent teeth."

The following is from the Group Health Association Inc. constitution:

"The following list of fees to be paid to Participating Dentists and Participating Dental Specialists is *not to be confused with the normal fees* charged patients by those dentists. Nor is this a commitment of dentists to render services at these fees to other than *insured patients of families having* a gross annual income of $5,000.00 or less. The *differential between the fees listed below and the fees normally charged for non-insured patients represents the contribution of the dental profession* to the operation of the G.H.D.I. Plan."

Some dentists, including Burdge and Lloyd, like to spend the first visit in careful study and examination, and quote the full fee at the second visit. Burdge's exception is with the recalcitrant patient. Here he informs the parent that she must pay on a time basis. He notes, "It is quite amazing how little time is required thereafter."

Most dentists who wrote preferred, as did Erwin, the idea of charging for each day's accomplishment.

". . . at the end of the visit, I summon the mother to the chair to demonstrate the services completed. On the way out she is delayed at the desk for arrangement of the next appointment and for payment of the charge for this visit. If it is some time before the next appointment, she is encouraged to mail in the difference if she cannot pay it all."

In any discussion of fees, the question asked by Fain arises, "How do you handle broken appointments?" Siebert points out that teenagers are particularly remiss in this respect; also he calls to attention the added hardship caused when scheduled appointments for several children in one family are broken because of the illness of one child.

We have discovered no simple solution for this problem. Our appointment card carries the notation—TWENTY-FOUR HOURS NOTICE IS REQUIRED TO CANCEL A RESERVATION WITHOUT CHARGE; however, we do not adhere closely to this. If an appointment is cancelled for good reason, the first time we are apt to accept this gracefully; the second time we caution the parent

*Selected from the ILWU-PMA Welfare Fund Pilot Dental Care Program Indemnification Schedule*

| | A† | B† | C† |
|---|---|---|---|
| 1. Examination and completion of treatment planning form | $6.00 | $5.00 | $8.00* |
| 2. Roentgenograms: | | | |
| Single film | 2.00 | 2.00 | 2.00 |
| Additional films (up to and including a total of 13 films) each | 1.00 | 1.00 | 1.00 |
| 3. Prophylaxis treatment (to include scaling and polishing teeth) | 6.00 | 5.00 | 5.00 |
| 4. Topical application of sodium fluoride (series of four treatments) | 20.00 | 20.00 | 20.00 |
| 5. Emergency treatment, palliative | 4.00 | 4.00 | — |
| 6. Extractions: | | | |
| Single with local anesthesia | 5.00 | 5.00 | 5.00 |
| Each additional tooth | 4.00 | 3.00 | 3.00 |
| 7. Anesthetics: General | 10.00 | 5.00 | 5.00–10.00 |
| 8. Pupal therapy: | | | |
| Pulp capping | 5.00 | 5.00 | 5.00 |
| Therapeutic pulpotomy | 12.00 | — | — |
| Vital pulpotomy | 10.00 | 10.00 | 10.00 |
| 9. Amalgam fillings: | | | |
| Cavities involving one-tooth surface | 6.00 | 4.50 | 4.00 |
| Cavities involving two-tooth surfaces | 9.00 | 7.50 | 7.00 |
| Cavities involving three or more tooth surfaces | 12.00 | 11.50 | 10.00 |
| 10. Silicate cement fillings one surface | 7.00 | 6.00 | 4.00– 8.00 |
| Acrylic or plastic fillings one surface | 9.00 | 6.00 | 4.00–10.00 |
| 11. Stainless steel crown primary tooth | 15.00 | 15.00 | 15.00 |
| 12. Fixed space maintainer | 50.00 | 20.00 | — |
| 13. Removable acrylic space maintainer: | | | |
| With stainless steel round wire rest only | 40.00 | 25.00 | — |
| 14. Broken appointments per thirty-minute schedule (unexcused) | 5.00 | 5.00 | 5.00 |

Based on 145 Children 4–14 years old the average cost estimated per child including examination, fluoride treatments, Bite-wings and required services:

| Age | Cost | Age | Cost |
|---|---|---|---|
| (4) | $73.31 | (10) | $112.50 |
| (5) | 98.68 | (11) | 100.75 |
| (6) | 111.78 | (12) | 96.95 |
| (7) | 119.54 | (13) | 108.50 |
| (8) | 132.28 | (14) | 138.75 |
| (9) | 147.59 | Average | 112.34 |

—No fee quoted.

* Only C includes Bite-wings.

† A California (open panel); B Oregon; C Washington.

that a minimum charge will be made thereafter; and the third time we charge a fee. When we accept more than a two-child appointment, we inform the parent that this is contrary to our preference.

In this respect, it may also prove profitable to observe the precaution made by one correspondent:

> "Beware of the child whose parent has permitted the teeth to become seriously destroyed unless you are prepared to pioneer discouraging soil, to spend time slowly weeding the parent's careless interest."

We condition this type of parent slowly. Conditioning a parent may be more successful and her conversion to full service for her child more effective if we raise her sights gradually. We subscribe to the philosophy that the uninformed parent should be fed just one steak of knowledge, not the whole cow, at the outset.

Ruskin, speaking of dental costs, said, "The truth is, of course, that the only dental salvation for the poor man is to go to the dentist early." He could have enlarged this to all men and to the calling of dentistry itself.

George Eastman, financial expert, said, "Money spent in the care of children's teeth is one of the wisest expenditures that can be made."

As for its effect on the dentist, Klenda[3] speaks of dentistry for children as the "lifeline" and the "showcase" of a family practice. McFall,[4] after a lifetime devoted to pioneering dentistry for children says, "I know of no other phase of dental practice which affords a doctor of dental surgery the long-time, self respecting satisfaction, compensation, security, and happiness that dentistry for children does."

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2. Brown, Stanley C.: Making Children's Dentistry Pay. Oral Hygiene, p. 631–632, May, 1942.
3. Group Dental Health Care Programs, Published by the Council on Dental Health, 1955.
4. Klenda, Harry M.: Children's Dentistry: Its Economic Importance. Ill. Dent. Journ. **19:** 49–60, February, 1950.
5. McFall, Walter T.: Children's Dentistry That Pays. J.A.D.A. **26:** 1497–1504, September, 1939.

## CHAPTER VI

# Dental Development

MORTELL[1] presents these median figures for eruption of the primary teeth:

| | | | In months | | |
|---|---|---|---|---|---|
| upper | 9.6 | 11.5 | 18.3 | 15.1 | 26.2 |
| lower | 7.8 | 12.4 | 18.2 | 15.7 | 26.0 |

This is over ten per cent greater for the maxilliary and over thirty per cent greater for the mandibular teeth than the figures given by Kronfeld and Schour:

| | | | Kronfeld and Schour | | |
|---|---|---|---|---|---|
| upper | 7.5 | 9 | 18 | 14 | 24 |
| lower | 6 | 7 | 16 | 12 | 20 |

Nolla dates the movement of eruption as beginning with the onset of root formation. At this period, she observes, the germ is surrounded by the radiolucent loose connective tissue of the dental sac, and in many instances by the dense radiopaque bone of the tooth crypt. At this time about one-third of the root is formed. The crypt adjacent to the forming root becomes the lamina dura.

Very recently the frequency of dental anomalies in children was reviewed by Menczer.[2] His study revealed that about one child in thirty-five manifests missing permanent teeth, less than one in a thousand manifests missing primary teeth. Congenitally missing permanent teeth were usually lateral incisors, with mandibular second premolars next in frequency. In the case of fused primary teeth, their permanent successors were usually normal in shape and number.

The observation has been made that care of the child's first dental machine is at least as important as care of the second; the more perfect the parts of the first machine in structure and arrangement, the more opportunity for the second to be likewise. Nature is a shrewd trader.

1. Mortell, John F.: Morphologic Consideration of Primary Teeth in Diagnosing Radiographs. J. Dent. Child. **21:** 90–102, (2nd. Quart.), 1954.
2. Menczer, Leonard F.: Anomalies of the Primary Dentition. J. Dent. Child. **22:** 57–62, (1st. Quart.), 1955.
Brandhorst, O. W.: Promoting Normal Development By Maintaining the Function of the Deciduous Teeth. J.A.D.A. p. 1196–1203, July, 1932.
Schour, Isaac and Massler, Maury: Studies in Tooth Development, The Growth Pattern of the Human Teeth. J.A.D.A. **27:** 1918–1931, December, 1940.

## CHAPTER VII

# Structural Differences Between Primary and Permanent Teeth

BEFORE attempting operative procedures for children, Ireland[1] observes that the dentist interested in his patient's welfare will acquire a knowledge of the anatomy and histology of the primary teeth. This will aid in his treatment planning, and operative procedures.

Examination of posterior bite-wing roentgenograms of the mixed dentition will quickly reveal that: (1) the pulp of the primary teeth is larger in comparison to the size of the crown than those of the permanent teeth; (2) the pulpal horns are closer to the outer surface of the tooth; (3) the mesial horn of the primary teeth extends for a greater distance into the crowns than does the distal horn; (4) the pulp chamber of the mandibular molars is larger than those of the maxillary molars; (5) the layers of enamel and dentin are not as thick in the primary teeth as in the permanent teeth (Figure 6).

Further, it will be helpful to the dentist serving children to note that: (1) the form of the pulp chamber of the primary teeth resembles the crown; (2) there is generally a pulpal horn under each cusp; (3) there is no appreciable difference in the mineral content of the primary and permanent teeth; (4) the enamel rods

FIG. 6: Roentgenograph to illustrate difference in structure between primary and permanent teeth.

in the gingival third of the primary teeth extend from the dento-enamel junction occlusally (or incisally).

1. IRELAND, RALPH L.: Prevention of the Primary Teeth. J.A.D.A. **34:** 383-388, March, 1947.

CHAPTER VIII

# Cavity Preparation

"The successful dentist recognizes that techniques for a primary molar involve the management of a young child and the collection of a reasonable fee. Hence a mechanically sound cavity preparation, in order to have practical value, should be simple to secure".[1]

IN ORDER to accomplish this end routinely, most quickly and effectively, an understanding of some of the basic histological, engineering, and related factors of practice is desirable.

## HISTOLOGICAL FACTORS

Cavity preparation and methods of placing fillings have been based primarily on engineering principles. This is right and necessary because the repair of carious teeth is a technical procedure. But now it is beginning to be realized that there also are histologic and biologic factors in the filling of teeth.[2]

Bodecker[3] contends that a great number of channels pass from the pulp through the dentin to the enamel and sometimes through the enamel to the surface of the tooth (Figure 7). These channels contain fluid which he calls the dental lymph. The quantity of fluid is greatest in newly erupted teeth. Massler writes that histologists are not in agreement with this view. Orban[4] states, ". . . experiments indicate that these channels are more permeable in young persons, losing their permeability almost completely in advanced age." Thus the tooth is most permeable, most sensitive, and most prone to caries when it erupts. With age it becomes increasingly less permeable, less sensitive, and less prone to caries.

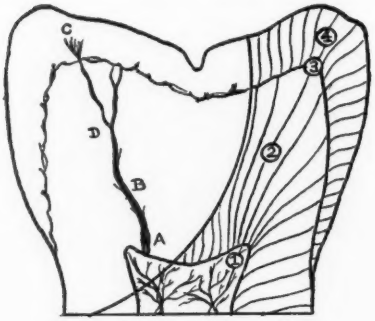


FIG. 7: Crown areas of sensation

Nutrient supply distributed by (A) odontoblast through (B) dental fibril, forked at the end (C) as it goes into the enamel. The fibril is within a tube (D).

Crown areas of sensation thus are: 1. pulp, 2. dentine, 3. dento-enamel junction, 4. enamel (to a degree). (The tube (D) becomes partially calcified (blocked) as the tooth matures, thus accounting for decreased sensitivity in older patients.)

This is the reason why a child can suffer as much pain during preparation for an occlusal filling in the first permanent molar as a middle aged person does during the excavation of a gingival cavity. In mature teeth most of the channels in the dentin have become blocked so that the degree of irritation reaching the pulp from the exterior is greatly reduced.

This may suggest a reason why rampant caries attacks principally the teeth of children and teenagers as well as why ruthless cavity preparation, particularly in young children, is apt to result in death of the pulp. It is thus essential that even greater than usual precautions be taken during cavity preparation in immature teeth.

Bodecker[5] advises that:

1. It is imperative to operate more slowly on anesthetized teeth than those not anesthetized.
2. It is imperative always to use a coolant to eliminate frictional heat of rotating instruments.
3. It is imperative to insulate metal fillings by effective cavity lining to protect against pulp temperature changes. This applies also to fillings having irritating qualities such as silicate cement and some of the acrylic fillings.
4. It is advisable to extend the cavity towards the pulp as little as possible so as to cause the least pulpal irritation.

There appears to be no complete agreement on just how far into the enamel the fibrils which carry sensation from the pulp extend. Bodecker, however, states that enamel that is supported by dentin in which fibrils have been severed by the bur is most apt to chip away from the tooth. This may be at least part of the explanation for chipping along the margin of fillings. Especially is this

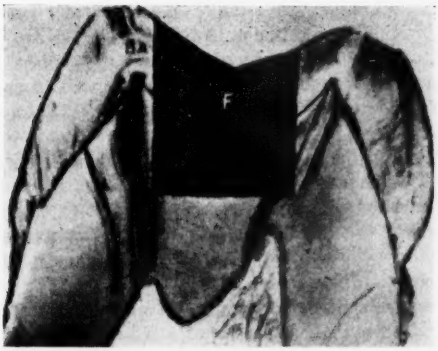


FIG. 8: Occlusal filling (F) cutting off tubules to marginal areas, making these brittle (BA) if operation is performed on recently erupted tooth. P, pulp. (Bodecker.)

the case with immature teeth. The inverted cone bur could be a major offender in deeper cavities (Figure 8).

### CAVITY PREPARATION IN PRIMARY TEETH

Practice factors: Inasmuch as silver amalgam appears to be generally our restorative material of choice in doing dentistry for children, it is essential that we understand its qualities of strength and weakness, and that we provide for these in cavity preparation. Brown points out:

> "Simple laboratory tests determine that amalgam is strongest in compression, next in shear, and weakest in tension. Whenever amalgam is used, the tooth should be prepared so that the favorable compressive property of the amalgam is utilized to its fullest advantage while the filling is protected against the forces of shear and tension . . . all angles or corners in an amalgam preparation should be rounded or gently curved."

In this relation, Weiland[6] says:

> "The same line of reasoning applies to a sharp corner formed by the intersection of two cavity surfaces whether it be an inside or outside corner. Stresses will be abnormally high at these points during the filling operation and later during biting; so much so that a crack may develop at these corners either in the filling or in the tooth itself."

In 1955 Guard concluded that not only Class II cavity preparations should contain gently rounded curves and angles, but that this also holds true for the Class I and Class V cavity preparations.

Taylor draws this summary:

> "I believe, with what we know now about the properties of amalgam, no informed person is using sharp line angles or point angles in amalgam preparation for either permanent or primary teeth. There is nothing in the condition of the tissues of the first teeth which prohibits the preparation

of cavities with sufficient extension, convenience, and retention. Cavities in these teeth should receive the same careful attention as those in the permanent."

After considerable study at the University of Nebraska to arrive at the most satisfactory cavity preparation for primary teeth, Lampshire[7] reports these recommendations:

1. a. The preparation should be based entirely upon dentin, and may penetrate at least one millimeter deep in any area of a primary molar tooth without fear of exposure.
   b. The buccal and lingual cavo-surface angle at the proximal should flare sufficiently to carry the margins into free cleansing areas. A 90 degree cavo-surface angle is desirable.
   c. The area at the buccal gingival and lingual line angles of the proximal box should be gently rounded.
   d. The depth of the gingival floor should be carried just below the level of the gingiva and below the contact of the approximating tooth.
   e. The walls of the proximal box should converge slightly as they approach the occlusal.
2. The isthmus should be approximately one-fourth the buccal lingual dimension of the tooth. This is referred to as a "wide" isthmus.
3. A very important principle which should be included is a rounded pulpal floor which starts very shallow at approximately two-thirds of the distance from the pulpal axial line angle to the most distal part of the preparation, and increases to full depth at the pulpal axial line angle. Full depth of the curve is equal to one-half the diameter of a No. 4 bur.
4. A rounded pulpal axial line angle which is equal to at least one-fourth the circumference of a No. 2 bur should be added.
5. Buccal axial and lingual axial retention grooves in the proximal box from the gingival wall, occlusally to the dentino-enamel junction should be included.
6. Although the gingival retention grooves which extends along the gingival wall at the gingival-axial line angle may not be as important as the other principles, it may be added. The groove shall be equal in depth to one-half the diameter of a No. 1 bur.

Analyzing these findings in an earlier report, Ireland[8] concluded:

"When a cavity preparation with a narrow occlusal isthmus, a flat pulpal wall, and a 90 degree pulpoaxial line angle was compared to a cavity preparation with a wide occlusal isthmus, side retention grooves, a rounded and sloping pulpal wall, and rounded pulpoaxial line angle, there was, in the case of the latter, an increase in the resistance to fracture of 4,414 per cent."

Taylor makes a comment which agrees with our experience.

"After keeping records on a small number of lower second primary molars in which the grooves were not eliminated, we concluded the tooth would have to be reentered practically every time."

In regard to badly carious primary anteriors, many adhere to the simple procedure of disking them. Lloyd states:

"I do not devote much time to restoring anterior teeth past the fifth year when there is much restorative work in the posterior region."

Humphries, however, does not agree with this view:

"Disking was abandoned by our office many years ago. Such teeth are filled with one of the new plastic materials properly color blended and painted into a cavity preparation which need not endanger the pulp."

McCall, discussing procedures in dental clinic service, arrives at a conclusion which bears frequent repetition. He says:

"Under no circumstances is any carious dentin left in a cavity of a tooth. Attempts to sterilize such dentin by the use of silver nitrate application or by the placing of so-called germicidal cements are a delusion and a snare. Pulp infection and pulp death invariably follow. And no tooth is so valuable in the arch that its retention with an infected pulp can be countenanced."

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## CHAPTER IX

# Proximal Caries

THE contention is made here that the incidence of proximal caries is at least as great as occlusal caries; that proximal caries is more difficult to find and more difficult to correct; that it is thus the more dangerous type of caries and should be so treated in the literature. Certainly early detection and correction of proximal caries can relieve the patient and the dental profession of the need for performing much of the complex dentistry presently developing.

Since proximal caries is especially prevalent in the younger patient, and, according to Massler, the Lactobacillus bacillus acidophilus count drops dramatically when all lesions are closed, it is most desirable that we evolve technics for attacking proximal caries early. The separator technic promises to be an important step in this direction.

Particular interest was expressed by Foster, Hagan, et al. Guest, clinicing on this at a state dental meeting prepared this brief outline of procedure:

First visit:

1. Separator wire (22 gauge copper); shape like surgical needle.
2. Insert between teeth.
3. Ends clipped and lodged under free gum margin of distal tooth; use band pusher.

Second visit, two weeks later:

1. Untwist 22 gauge, clip one end, withdraw.
2. Insert 18 gauge copper wire as above.
3. Sharpen end with stone for easy insertion.
4. Clip twisted ends about second turn.
5. Stone end to prevent cheek and mucosa irritation.
6. Have patient bite wire out of occlusion with Baker-Swinehart band pusher.

Third visit, two weeks later: (teeth are now gently separated.)

1. Reduce size of carious surface with Moore sandpaper disc.
2. Small inverted cone bur to clean out caries.
3. Pack in and wipe Cu amalgam with suitable thin bladed plastic intrument.
4. Do approximating areas at same time, smooth with amalgam finishing strips.

*Some Pointers*

Teeth will drift back in a matter of hours. This procedure is ideal for incipient caries and removal of overhanging fillings. It is not indicated if caries penetra-

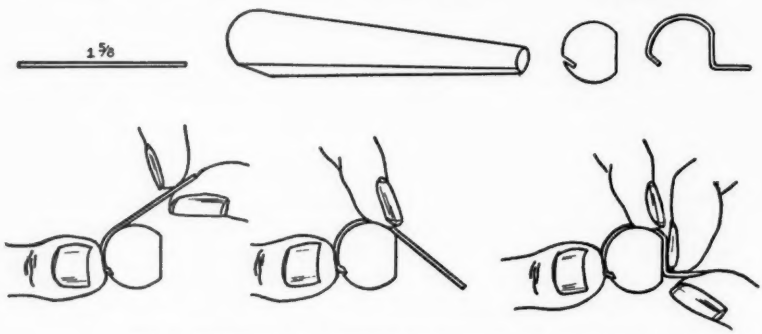


FIG. 9: Equipment and procedure for preparation of separators

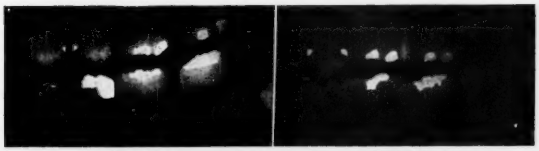

FIG. 10 FIG. 11

FIG. 10: The restorations are freshly inserted in approximating teeth. The separation will close shortly.

FIG. 11: Several years after the insertion, mesial and distal of the same tooth

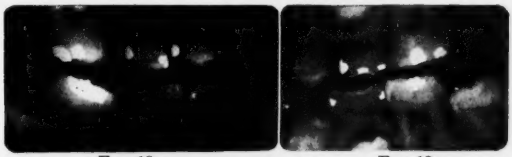

FIG. 12 FIG. 13

FIG. 12: Several years after the insertion, the size restorations required for the mandibular premolars is preferable. We used the separator technic for the maxillary where the cavities were larger than we advise only because of the ease of separation and a larger field of vision here than is ordinary.

FIG. 13: Restoration placed in proximal cavity of a second primary molar to protect the mesial surface of the first permanent molar.

FIG. 14: Proximal "spot" fillings eight years after insertion

tion into the dentin has undermined the enamel or weakened the marginal ridge.

This explains some of the questions asked by a number of correspondents. Below is a picture of the simple equipment used by our assistant to prepare the separators and illustration of some proximal cavities that were filled after separation (Figures 9–13).

Lampshire asks if this procedure is economically sound. It is definitely. Lloyd states that he does not believe in "spot" fillings. Others also make a blanket indictment of spot fillings. The majority, however, assume a more middle of the road position. For illustration, to prepare an MO in each first permanent molar when loss of the primary second molar shows a cavity the size of a 33½ or 35 bur is needless tooth destruction (Figure 14); however when the proximal caries undermines the enamel margin, we are in agreement that a class two restoration is definitely preferable to a spot filling.

The separator technic has at least three purposes:

1. Separation to expose caries. Some is incipient decalcification barely in-

volving the enamel. Under these circumstances, disking back to sound healthy structure is all the corrective treatment required.

2. Separation to expose caries which has decalcified the enamel to more than half its thickness. The area is apt to be so small as to require no larger than a 35 bur for preparation. (The separation technic is not advocated for cavities that are larger.)

3. Separation to expose an overhanging filling. The separation permits access and disking for simple correction.

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(*To be continued*)

## A.S.D.C. TABLE CLINICS 1957

All members of American Society of Dentistry for Children who are interested in giving a table clinic Sunday, November 3rd during the A. S. D. C. meeting in Miami Beach, Florida, at the Balmoral Hotel, please fill out the application below and mail to Dr. Bernard Neuwirth, 220 Miracle Mile, Coral Gables 34, Florida.

NAME _____ CITY _____ STATE _____

HOME ADDRESS _____ PHONE _____

OFFICE ADDRESS _____ PHONE _____

TITLE OF TABLE CLINIC _____

AMOUNT OF SPACE NEEDED _____

ADDITIONAL EQUIPMENT NEEDED _____

*(Projectors, electrical outlets, etc. If you can furnish your own projectors and screens, please indicate.)*

HOME TOWN PAPER _____

REMARKS _____

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STATE OF FLORIDA
EXECUTIVE DEPARTMENT
Tallahassee

Officers and Members
American Society of Dentistry for Children

Dear Friends:

On behalf of the citizens of the State of Florida, I welcome you to the 1957 Convention to be held at Miami Beach.

I am confident you will find here warm hospitality and a determination on the part of our people and agencies to help in every possible way to make your meeting a success and your stay with us a happy one.

We want you to see the growing greatness of our State—in agriculture, in industry, in education, and in many other ways. We are proud of Florida. We see ahead opportunities as bright as our sunshine—opportunities for people to live and work and play, not only in warm sunshine, but also in healthy, happy, and solidly prosperous communities.

We will be proud to have you with us and hope that while you are here you will see as much of Florida as you can.

Sincerely,
LEROY COLLINS
Governor

# Osteopetrosis

## Report of Case

H. C. Wittich, D.D.S.
A. P. Chaudhry, D.D.S., Ph.D.
R. J. Gorlin, D.D.S., M.S.
A. R. Stoesz, B.S., D.D.S.

THIS case is reported as it is of special interest to the pedodontist from several aspects. Firstly, the disorder is one of these exceedingly uncommon generalized bone diseases which may manifest itself in the oral cavity. Secondly the management of some of the sequelae of this disorder like delayed or unerupted dentition and frequent osteomyelitis following surgery, may pose problems to the dentist whose primary interest is to establish functional efficiency of the masticatory apparatus. Thirdly, it stresses the necessity of teamwork involving the Pedodontist, the Orthodontist and the Oral Surgeon in order to provide the patient with adequate prosthesis for proper mastication.

### Case Report

A four-year old white male was brought to the School of Dentistry, University of Minnesota, for consultation and management of his dentition.

At the age of three months the patient had developed respiratory infection, and also hydrocephalus with bulging of the anterior fontanelle. He was admitted into the hospital. X-ray examination of the skeleton revealed marked abnormalities of all bones, and possible fracture of the pelvic bone. On May 27, 1952, he was admitted into another hospital for further investigation. On the basis of x-rays taken at this time the diagnosis of "Albers-Schönberg's disease with compression of the optic foramen", was made. The patient had a ventriculogram done on July 17, 1952. There were no definite brain abnormalities demonstrated by the ventriculogram. However, slight ventricular enlargement was suggestive. Due to failing sight in the left eye, the decompression of the left optic nerve was performed on Sept. 22, 1952, and a tantalum plate inserted. In December, 1954, the patient bumped his head against a board and cut open the left side of his forehead. On December 20, 1954, an operation for revision of the tantalum plate was performed. In the latter part of April, 1955, the patient again bumped his head and at this time the tantalum plate was removed. In March, 1956, it was decided to insert a plastic plate, the patient having a cranioplasty and insertion of a plastic plate in the left fronto-temporal area at that time.

The patient has an older brother, 13½ years of age, an older sister, 10 years of age, and a younger sister, 18 months of age. They all seem to be free from the disease. Neither of the parents had the disease and were not related to one another. On the paternal side, the father's niece has been suffering from the same disorder which was diagnosed for the first time when she was five years old.

The physical examination on this day (Feb. 28, 1956) revealed a four-year old

Divisions of Pedodontics, Oral Pathology, and Oral Surgery, School of Dentistry, University of Minnesota, Minneapolis, Minnesota.

FIG. 1A

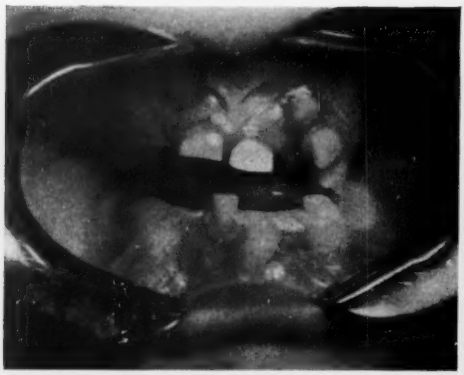

FIG. 1B

FIG. 1C

FIG. 1D

FIG. 1A—The seven erupted primary teeth can be seen. Occlusion of even these few was markedly faulty.

FIG. 1B, 1C, 1D—Radiographs of anterior and posterior areas showing failure of root formation of most teeth, marked density of alveolar bone.

white male, 3′ 5½″ tall and weighing only 37 lbs. He was mentally alert and appeared to be quite intelligent for his age. He was very cooperative and talkative. Extra-oral examination revealed bulging of the frontal eminences, the old scars on the scalp from previous craniotomy, and loss of vision from the left eye. (Fig. 3). Intra-oral examination revealed a fairly good oral hygiene. There

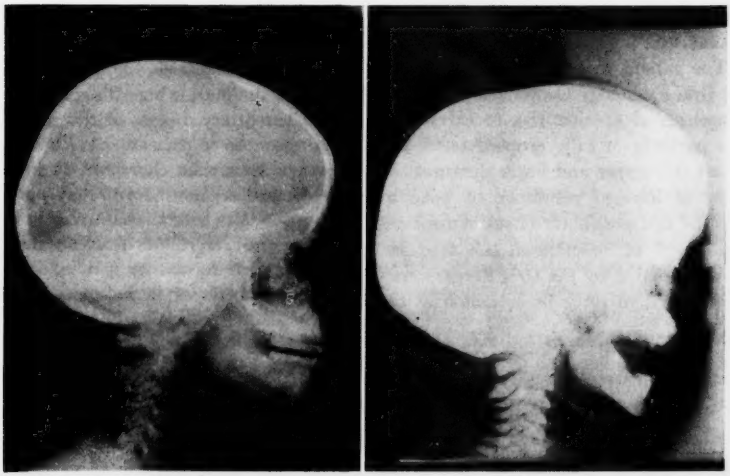

FIG. 2A FIG. 2B

FIG. 2A—Cephalometric radiograph of normal four year male

FIG. 2B—Cephalometric radiograph of patient. Note marked radiopacity of all bones of skull and face, hyoid and cervical vertebrae. There is a marked flattening of the skull, and underdevelopment of the maxilla and mandible.

FIG. 3A FIG. 3B FIG. 3C

FIG. 3A—Gingiva approximately six weeks following removal of all erupted teeth. Note bilateral cranioplasty scars.

FIG. 3B and 3C—Patient with dentures inserted

were only seven teeth which were partially or fully erupted $\frac{A|ABCD}{A|C}$. (Fig. 1A). A radiographic examination revealed numerous unerupted teeth. (Fig. 1B,C,D). A cephalometric x-ray disclosed underdevelopment of the tooth-bearing areas, bulging frontal eminences,

and a generalized radiopacity of the cranial and facial skeleton. (Fig. 2B).

The patient was presented at the clinical Oral Pathology Conference where the consensus of opinion was to extract all the partially or fully erupted teeth and insert full upper and lower dentures. In view of lowered resistance of bone to trauma and possibility of subsequent development of infection in this disorder, it was decided by the Oral Surgery staff that only two teeth be extracted at the first time. On March 8, 1956, the $\frac{|}{A|C}$ teeth were extracted under general anesthesia. There were no postoperative complications. Healing was normal and satisfactory. On May 1, 1956, the rest of the erupted teeth $\frac{A|ABCD}{|}$ were extracted. The patient was placed under the care of the pedodontist for construction of dentures.

Full upper and lower dentures were made and inserted in the patient's mouth on May 29, 1956. The dentures were prepared in a routine fashion. Due to the small size of the arches, however, both primary and small permanent artificial plastic teeth were used. The patient has been wearing the dentures for over a month with comfort, and there appears to be a noticeable improvement in masticatory efficiency. (Fig. 3).

*Discussion*

This disease is also known as Albers-Schönberg's, osteosclerosis fragilis generalisata, and marble bone disease. This is a rare hereditary disease of the skeleton and appears to be transmitted as a simple recessive Mendelian character. It is usually congenital; however, it may not be recognized until sometime after birth. The skeletal disorder results from an imbalance between formative and resorptive mechanisms. There is increased osteoblastic activity resulting in hypertrophy of endosteal bone formation and obliteration of the spongiosa. Osteoclastic activity is either absent or minimal. In spite of excessive density and increased hardness of the osseous tissues, fractures from trivial causes are frequently observed. The narrowing of the foramina causes increased intra-cranial pressure with subsequent atrophy of optic nerves and impairment of vision. The delayed eruption or lack of eruption may be attributed to the pressure of dense thick cortical bone overlying the tooth germs. It is possible that pressure applied by the dentures may stimulate emergence of the unerupted primary and permanent teeth, which would necessitate denture reconstruction.

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# Chrome Alloy and its Adaption to a Molar Band Technique

GEORGE N. BOONE, M.S., D.D.S.

THE ability to make bands is a necessity in practicing good dentistry.

Such bands are basic in space maintenance and in simple tooth guidance problems.

Through improved techniques, better molar bands of chrome-nickel alloys may be fabricated quickly, simply and expertly by the dentist today.

These techniques, one of which is to be described in detail here, utilize those physical characteristics of stainless steel that make it the ideal material for such work. Spot welders have made it possible for the dentist to make use of this outstanding metal with superior results in less time than was previously required.

It is important that all of us in dentistry understand this metal and are capable of making a molar band quickly and expertly.

The physical characteristics of the metals most significant to the dentist are these: softness, ductility, toughness or impact strength, endurance limit, shear strength, creep strength, and corrosion resistance.*

Simply, however, the ability of the metal to be softened or annealed permits its easy workability. It is then ductile, and it may be stretched, shaped, and formed to tooth contours easily, Significantly, it "work hardens" or "self hardens" during this stretching and forming. That means that the operator starts work with a softer band and finishes with a harder one.

* For more detailed definitions of these characteristics, see Glossary.

Since the burnishing of the occlusal of the band adds tremendously to its edge strength, the completed band hugs the tooth closely. This factor aids in the prevention of the breakdown of the cement. However, if for any reason the cement *should* break down, the chrome alloy band should be so designed as to become freely disengaged from the tooth.

The chrome-nickel alloys withstand the heavy intermittent stress of mastication because of their impact strength. There is also more than adequate resistance to corrosion, even for extended use in the mouth. The quality of the surface finish directly affects this property. Finally, the problems common in the early use of chrome-alloys in dentistry, loss of temper due to heating, and the difficulty of soldering pieces of the metals together, have been solved by the development of spot welders especially for dentistry. The stored energy spot welder, for example, has led to great progress in the use of the chrome alloys in this field. The clean, strong joint made by welding has made this the preferred technique among users of the chrome-nickel alloys.

A spot welder passes a high amperage of current at very low voltage through the electrodes. The electrodes, holding the pieces to be welded by spring pressure, build up intense heat as they furnish resistance to the current. This action concentrates the heat at the points of the electrodes, fusing the metal between. There is no distribution of heat; it is concentrated at the interface of the metals. For that reason, there is no dis-

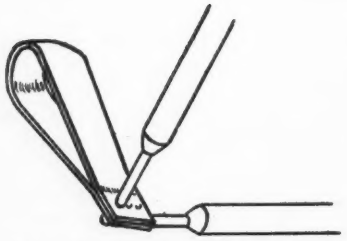

FIG. 1. Close the ends of the blank and spot weld them at least one-sixteenth of an inch from the end.

coloration, overheating, or danger of the splattering of molten metal. And there is no cleaning required. The joint is equal in strength to the original separate pieces.

Since no holding device is necessary to avoid the heat, as is true in soldering, the band may be held in the fingers in position under the electrodes, permitting better control of positioning of the parts.

One single weld is like a rivet, and since one rivet might twist off, it is advisable to use a number of individual welds at each joint.

## FORMING A MOLAR BAND FROM CHROME ALLOY

The remainder of this paper will detail the use of chrome-nickel alloys in forming a molar band. These techniques, properly applied, form a foundation for all other band work.

Instruments required are a band pusher, band-forming pliers*, scissors, stones for trimming the band, a spot welder, and various wheels for polishing.

An extra-narrow pillar file may be substituted for the band pusher. It is preferred by some practitioners because its sharp edges dig into the metal, preventing slipping of the instrument.

* Other pliers may of course be used with other techniques.

Manufactured form-fitting molar maxillary or mandibular blanks are available, correct in width, thickness and shape. The preferred thickness is .006 because of its ability to withstand the constant stress of mastication. However, .005 thickness can be used if even greater ease of adaptation is necessary. Form-fitting molar blanks are preferred to preformed bands because their use allows a custom fit and faster fabrication. The blanks used should be obtained already contoured, and in an open "U" shape.

To begin the fabrication of the band, close the ends of the blank (see Fig. 1) and spot weld them at least one-sixteenth of an inch from the end.

Next form a small loop for the band-forming pliers near the welded end. This

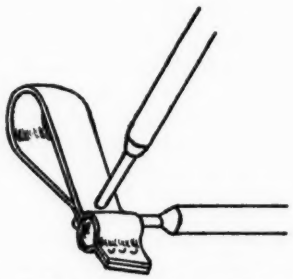

FIG. 2. Spot weld again, and the basic blank is formed.

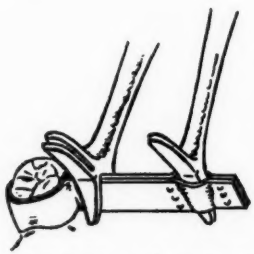

FIG. 3. Apply the band-forming pliers to adapt the band.

can be accomplished by placing the large loop over the top of the electrode on the welder and pressing the band together, as shown.

Spot weld again, (Fig. 2) and the basic blank is formed. This small loop provides a hold for the band-forming pliers to apply leverage later.

The basic blank is placed on the tooth with the weld or tail on the lingual surface. Line up the band with the fingers. It is of major importance that this positioning of the band be perfect. The occlusal should be in its final position and flat. Tipping the band on the buccal, mesial, distal or lingual surfaces results in an improper fit. When the placement is correct, adapt the buccal surface of the occlusal edge to the tooth with the band

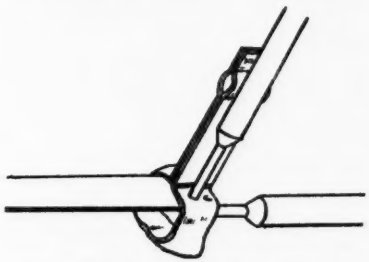

FIG. 4. The band is closed by use of the patch technique, with enough "tail" left on to serve as a handle.

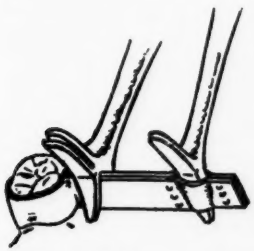

FIG. 5. The band is readapted with the pliers for the additional bulk of the patch.

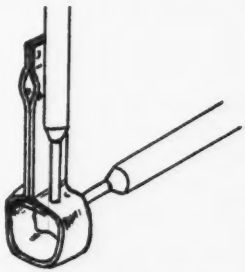

FIG. 6. With the band again removed, the remaining side of the patch is spot welded.

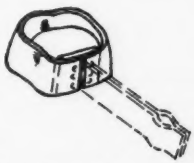

FIG. 7. Excessive patch material and remaining tail of the original loop are removed with the scissors.

FIG. 8. The completed band

pusher or file. Do the same on the mesial and distal edges. This important step provides a seat for the band in its further fabrication, and it assures the operator that the band will be in the identical position when he places it on the tooth again.

Apply the band-forming pliers in the manner shown, (Fig. 3) and cinch the band to the tooth. A slight rocking motion with the pliers will tighten the band considerably. The band is removed and a lingual joint is made using the "patch" technique. A piece of plain band metal,

of the same dimensions as that used in the band, is placed across the joint inside the band. It is deliberately kept long enough to provide a handle for easy manipulation at this stage. (Fig. 4)

Only one side is welded at this time. The band is placed on the tooth again, readapted on the buccal, and once more the band-forming pliers are used. This process readjusts the band for the additional bulk on the patch. (Fig. 5)

The band is again removed, and the other side of the patch is spot welded, (Fig. 6). The excessive patch material and the remaining tail of the original loop are removed with scissors, and cut flush with the trimming stone, (Fig. 7).

Placed on the tooth, the band is finally adapted with the band pusher or file to the shape of the tooth, beginning on the buccal surface and working toward the lingual patch. Excessive material is worked into the lingual groove. The gingival proximals are festooned to prevent irritation. This operation is accomplished by the use of a trimming stone or the scissors.

The band is completed by polishing. (Fig. 8) Standard polishing techniques used in dental practice are adequate. As has already been suggested, polished chrome-nickel alloy, with its clean, brilliant, permanent luster, provides a surface to which food cannot cling.

## Conclusion

It is important for all of us in dentistry to be able to fabricate bands, both for space maintenance and for tooth guidance. The technique described here has detailed the construction of a basic band. It utilizes the physical characteristics of the chrome-nickel alloys which make them superior materials for dental use, and for spot welding. Improved techniques and equipment have gained for the alloys acceptance by more dentists every year.

## Glossary

Characteristics of chrome-nickel alloys:

Softness: The ability to be softened or annealed to permit easy workability.

Ductility: The ability to withstand deformation or elongation without rupture.

Toughness or Impact Strength: The ability to stand up under a hard blow or sudden wrench; a resistance to shock loads.

Endurance Limit: The ability to withstand repeated cyclic stress or flexing.

Shear Strength: Resistance to fracture under load.

Creep Strength: Resistance to gradual elongation under load.

Corrosion Resistance: The ability to withstand deterioration when in contact with solutions and vapors.

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# Unit News

### New Jersey

Dr. Raymond Werther, Chief of the Dental Service of the Children's Hospital of Philadelphia, recently announced the organization of a Dental Rehabilitation Clinic in the Municipal Hospital of Camden, New Jersey, to render dental service to handicapped children of the South Jersey area. Chief of this dental service will be Dr. Milton B. Asbell, who will also serve as its Orthodontic Consultant. Other members of the staff will include Drs. Paul Zackon, Marvin Silver, Robert Kaplan, as Visiting Dentists; Dr. Henry Wisniewski, Oral Surgery Consultant, and Dr. Walter D. Cohen, Consultant in Oral Medicine. The entire staff are also members of the Dental Department of the Children's Hospital of Philadelphia. This clinic will be made possible through the generosity of the combined labor organizations in this area. The AFL-CIO have organized a Municipal Hospital Dental Clinic Committee of which Albert K. Plone, Esq. is Chairman, and Frank E. Meloni, President, South Jersey Council, and Joseph J. McComb, President, Camden Central Labor Union, as Co-Chairmen. The clinic will meet a long felt and urgently needed service for the children of the South Jersey area who are physically and mentally handicapped. These unfortunate children in the past have had no available means for dental treatment, and with this new facility, such care can be given.

Edward C. Garrity, Esq., Commissioner of the City of Camden, who is directly responsible for the operation of the Municipal Hospital, has made available such physical space as will be needed for this clinic. Lewis L. Coriell, M.D., is the Medical Director of the Hospital.

### Michigan

On January 30 at the Hotel Statler in Detroit the Michigan Unit co-sponsored with the Detroit District Dental Society an all day scientific program for Children's Dental Health Day. Dr. Drexel Boyd gave two clinics: "Is High Speed Adaptable to Pedodontics" and "Restorative Procedures for the Child Patient." Dr. Ralph D. Rabinowitch's two topics were, "The Parent-Child-Dentist Relationship" and "The Challenge of the Child Patient." Dr. Edward A. Cheney covered the following topics: "Which Abnormalities of Occlusion Need Not be Treated" and "The Essentials of Interceptive Service for the Child Patient."

The clinics were well attended and a credit to the National Children's Dental Health Day.

### Connecticut

The Connecticut Unit held an all day meeting on January 16 at the Fones School of Dental Hygiene of the University of Bridgeport. The clinicians presented table clinics in the morning and participated in a panel session during the afternoon. The Clinicians were: Seymour Koster, Portchester, N. Y., Mark Wallach, N. Y. U., Helmi Fogel, Tufts, and Marvin Goodman, Hartford.

### New York

The following news of the Metropolitan Unit was written by M. Joel Freedman and published in "The Bulletin of the New York State Society of Dentistry for Children."

It has been announced by Dr. Abraham Kobren, President, that the program of the Metropolitan Unit of the New York State Society of Dentistry for Children has been designed to meet the needs of its widely distributed membership. Study groups and meetings have been planned for various areas of the city and suburbs. The opening meeting was held October 15th at the New York University College of Dentistry. The speaker, Dr. Max H. Jacobs, of Tufts University Dental School, discussed "Oral Lesions In Childhood." The next meeting was held Wednesday, December 12th, 8 P.M., at the Medical Library, Grasslands Hospital, Valhalla, Westchester County, N. Y. The Panel on "Pedodontic Problems" consisted of: Alexander Blum, B.S., M.D., John T. Flynn, D.D.S., Veronica O'Brien, M.D. and Arnold Rosenberg, D.D.S. Another meeting is planned for New York City in early May.

### Hawaii

The Hawaii Society of Dentistry for Children sponsored a 40-hour post-graduate course in "Tooth Guidance." The course was conducted by Dr. Irwin I. Beechen, of Oakland, California, Associate Clinic Professor of the College of Physicians and Surgeons School of Dentistry, and Dr. George N. Boone, of Pasadena, California, Associate Professor of the Orthodontic Department of the University of Southern California School of Dentistry.

The presence of two Honolulu orthodontists, Dr. Arthur Chun-Hoon and Dr. Glenn M. Masunaga, alerted both the class and the Professors. In addition to Dr. John E. Jansheski, of Mills Valley, California, the class included Drs. Henry M. C. Chang, Kwock B. Chun, Robert M. Gibson, Harry K. Ishida, F. S. Kagihara, K. N. Kaneo, Kanemi Kanazawa, Manuel C. W. Kau, Robert K. T. Look, James S. Sasaki, Warren T. Wakai, Joseph M. Yamamoto and Stanley H. Yanase.

Two courses of special interest to pedodontists, were presented at the University of Hawaii recently.

Four instructors, headed by Dr. Charles A. Sweet, Sr., Director of Dental Health in the Public Schools of Oakland, California, covered most of the phases of pedodontics. Dr. Vinson M. Weber, of Portland, Oregon, Associate Professor of Pedodontics at the University of Oregon Dental School, Dr. Manuel C. W. Kau, of Honolulu, president of the Hawaii Society of Dentistry for Children, and Mr. William P. Bellando, of Honolulu, completed the foursome. The six-day postgraduate course consisted of both didactic lectures and clinics involving patient-dentist participation.

Dr. Henry M. C. Chang, Koon Sut Ching, John E. Knight, Daniel M. Kugiya, Donald Y. Miura, Suewo Okazaki, Masaichi Sugawa, Ernest S. Tanaka, Leslie Y. Yamanaka, Joseph W. C. Young, Isao Masunaga and Peter G. C. Wong completed the course which extended from December 16 through December 21, 1956.

### Western Pennsylvania

A meeting of the Western Pennsylvania Society of Dentistry for Children was held after a dinner at the Royal York on Thursday, November 8, 1956. There was an election of the following officers:

President, Dr. John Dovey
President-Elect, Dr. J. J. Bonello
Vice President, Dr. Morton Winkler
Secretary-Treasurer, Dr. Frances O'Laughlin

Dr. C. W. Hagan was elected Executive Board Member Emeritus.

Members of the Executive Board include the following:

Dr. F. L. Vaughns
Dr. E. F. Rapp
Dr. R. G. Meisel

### Illinois

On February 5, the Illinois Unit held its meeting in conjunction with the Chicago Mid-Winter Meeting at the Hilton Hotel. Dean George W. Teuscher who recently returned from an extensive four month tour of the world spoke on "The Status of Children's Dentistry Around the World."

Plans are being made for a pedontic seminar which will be held this spring. President Norm Olson sends an invitation to all interested and promises further details at a later date.

### Oregon

Greetings from the great state of Oregon, via Frank C. Morris! Many wonderful events are happening in our Unit under the leadership of Donald Porter, President, who is ably assisted by Dan Haselnus, President Elect (that little ball of fire with the big cigars) and by our charming Secretary-Treasurer Evelyn Strange. Big Bob Gardner of Oswego has provided us with a splendid series of lectures and clinics as the program chairman.

Last November Dr. John Ingle of the University of Washington Dental School presented two sessions on endodontics. This January 30th at the afternoon session of the unit, Dr. Matt Matthews of the University of Oregon Dental School Orthodontia Department was our guest speaker. Dr. Matthews gave a short course on "Mixed Dentition Analysis." That evening Dr. David Mahler of the University of Oregon Dental School Department of Dental Materials spoke on "Resistance Form Evaluation of Class II Amalgam Restorations."

On March 27th Bob Gardner presented Drs. McCauley and Lillywhite of the University of Oregon Medical School in another of his fine series of clinicians.

At a noon luncheon held at the Aero Club in Portland on Tuesday March 5th, our unit honored Dr. Maury Massler of Chicago, who appeared before two sessions of the Oregon State Dental Association Convention held in Portland March 4, 5, 6. Unit members presented several table clinics at the Convention. Among them were: Gerald Cogan, Don Porter, Ted Suhrer, Duane Paulson who presented pedodontic technique projects covering operative dentistry, pulpotomies, and treatment of fractured permanent anterior teeth.

Ken Jensen, our immediate Past President, had a very interesting table clinic on space maintainers.

Edgar Blumenthal presented a clinic on patient education and credit procedures. Marian deStoppelaar and Evelyn Strange had a fine display of pedodontic appliances used to stop oral pressure habits. Bob Gardner put on his usual sterling performance in the manipulation of stainless steel crowns. These people are to be commended for their fine efforts in advancing children's dentistry to the many interested dentists at the convention.

Dan Haselnus also had a table clinic on a corrected impression technique for immediate dentures. Although a little out of the line of children's dentistry it only proves again Dan's versatility.

Recent scuttlebutt has it that the Northwest Pedodontic Conference is to be held at the Shore Lodge, McCall, Idaho sometime this fall. It promises to be a terrific meeting so keep it in mind. See you all in the fall at McCall!

# The Health of the Child is Dependent on Dental X-Rays

CHARLES A. SWEET, JR., B.S., D.D.S.*
JOE G. SWEET, II, D.D.S.†

IT IS the obligation of every dentist to give his child patient the very best in dental care. To accomplish this goal we must have at our command all modern diagnostic aids. Dentistry for children has advanced to a highly skilled science. No more are we interested in only the teeth, but we are the guardians of the whole oral structure. To satisfy this responsibility we must utilize the wonderfully revealing field of x-rays.

X-rays recently have become the prime evil of certain uninformed men who, for the sake of publicity, or because of incorrect facts, have been quoted as saying that all dental x-rays are harmful and even go so far as to state they are a possible cause of leukemia. This panacea of abstinence from dental roentgenograms is abominable as it deprives the dentist, as well as the family of the child, of the basic knowledge of a proper diagnosis. The statement that today's modern dentist utilizes excessive amounts of roentgen units is completely false, but being sensational in nature, is given publicity which is confusing and damaging to the public.

To combat this deception let us speak forth the truth. The public and the profession should know the value of diagnostic radiography and its safety record. Without dental x-rays for diagnosis over 60% of interproximal (hidden) decay is missed and undetected. The ability to determine normal growth, missing teeth, pathology (cancer, Paget's Disease, etc.) and supernumerary teeth would be completely lost; with these end results:

1. Management problems—small cavities would increase in size, causing pain, discomfort and lack of understanding.

2. Additional hours to do pulpal therapy or space maintenance, due to lack of early detection.

3. Increase in growth and development problems.

4. Cause an economic hardship by increasing the cost of dentistry.

5. Create psychological problems in children whose teeth are unsightly, due to the operator's lack of ability to properly diagnose the case at an early age.

It has become apparent to the dental teaching profession that in the far past the amount of radiation received by the patient in producing diagnostic x-rays has been dangerous.

The practice of film packets being held by the dentist, and the use of enormous overdoses of radiation to produce diagnostic x-rays should be stopped immediately. A recent article has appeared in one of our local newspapers informing the public that the dental profession was guilty of giving the unsuspecting patient 300 roentgens in producing diagnostic x-rays for children, and continued that this amount of radiation was necessary to obtain diagnostic films. This may be the routine of a few dentists throughout the United States, but such flagrant violation of the patients' health and future is not

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being taught in dental colleges today. It is now possible, with modern x-ray equipment, fast speed film, aluminum filtration, and proper dark room procedures, to produce diagnostic radiographs of excellent quality with minimal exposure to the patient. At the College of Physicians and Surgeons, a Dental College in San Francisco, a twenty-four film complete dental x-ray survey is taken on an adult patient. The patient receives less than 5 roentgens in total. Furthermore, the amount of radiation is spread over an area of thirty square inches. This amount of radiation, measured in roentgens to one specific tooth or area, would be approximately 0.2 to 0.3 r. This is an enormous difference in the total amount of radiation that dentists supposedly are giving their patients.

It has been the practice of men who are specialists in doing dentistry for children to reduce the amount of radiation to less than 0.2 to 0.3 r. per film exposure. Any person who has any experience in diagnostic x-ray work would immediately recognize the fact that if you have a small or thin object less radiation is necessary to study that anatomical part by x-ray examination. A child being small, and the bones not being highly calcified or extremely large, allows the dental practitioner to examine the child patient with much less radiation than the adult patient.

The young child between the ages of three to five years of age has only twenty teeth, and six to eight radiographs are ample to survey the child's teeth and dental arches. This reduction in the number of x-ray exposures to the child would reduce the amount of radiation to approximately 0.5 to 1.0 r. over twenty square inches of area.

The pioneer work of Dr. Gordon Fitzgerald, at the University of California, in adapting extension cone technics to the dental x-ray machines has been one of the most important steps in eliminating excessive radiation to our patients. The Bureau of Standards of the American Dental Association now requires that manufacturers of dental x-ray machines build their product with at least 1.5 mm of aluminum filtration.

The technic of placing and properly retaining the dental x-ray film packet in the mouth of the patient is being stressed continually in our dental colleges. Proper film placement eliminates unnecessary retakes, and reduces excessive angulation that would tend to aim the central beam toward the chest or reproductive organs.

We are most alarmed by the manner of misleading information that is being given to the public, which influences them to ignore disease and infectious conditions in the mouth, teeth and jaws. It is mandatory by experience, that a dentist take an x-ray of the tooth or part he intends to repair prior to performing a dental operative procedure. We are aware that if the treatment is more destructive than the disease that we should eliminate the treatment. Have faith in your dental colleges and your dental societies, for we are trying to give our graduates and undergraduates the finest dental education posible. There is not a country in the entire world that compares with the United States in dental health. Our success is substantially aided by the use of x-rays for diagnostic purposes.

It is extremely evident that by proper film placement, and use of aluminum filtration, fast film, higher K.V.P., and long cone technic the amount of r. received by the child is an extremely safe dose; and under normal procedures each child should receive a full mouth (six to eight film) survey every two to three years, augmented by bite wing x-rays twice a year if indicated.

# Book Reviews

BRASH, J. C., MCKEAG, H. T., SCOTT, J. H., AND TILDESLEY, M. L. The aetiology of irregularity and malocclusion of the teeth. 2nd ed., London, Dental Board of the United Kingdom, 1956. xiv + 503 p.

This is a text of considerable magnitude and it becomes difficult for the reviewer to adequately assess the value of an effort, which in this instance, is the compilation of a lifetime of thought and study. The review must seek to be an objective description and the reader alone may decide upon the value of such a work for addition to his knowledge and library.

Part I of this treatise isa classic standard work which was originally expanded from a series of lectures presented by Dr. Brash. The material is basic and much of it is duplicated in other currently available texts. It comprised information valuable to orthodontics up to the year 1929.

Part II is an addition to the first edition by Mr. McKeag and Dr. Scott in surveying the literature from 1929 until the present. It is a masterpiece of factual gleaning to bring the wheat to the reader without resorting to copious texts. This is invaluable to the orthodontic student in developing his background of thought. But to all who are concerned with orthodontic care, we should like to direct their attention to pages 423 to 458. Therein lies a studied conclusion of all the foregoing in trying to formulate what we may consider as the "normal" dentition. The clinician's evaluation of orthodontic problems is often of such complexity that an assessment of these same problems, as contained in this work, comprises an invaluable point of reference for the orthodontist to constantly evaluate his own motivations.

The very last section is an appendix by Miss Tildesley which is a short essay on the value of statistical research in orthodontics. It is quite removed from the clinical problem, but it does exhibit scholarship.

MARVIN DAVIS

FOLEY, F. E. AND GUTHEIM, R. N. Serum hepatitis following dental procedures. Ann. Int. Med. **45:** 369–80, Sept. 1956.

Homologous serum hepatitis occurring after administration of blood, plasma and certain derivatives has been documented. It has been recognized that serum hepatitis may occur also after the skin has been punctured for therapeutic, diagnostic or cosmetic reasons.

The occurrence of serum hepatitis following dental procedures has been considered possible and the present study offers evidence to support this contention. 50 cases of serum hepatitis were studied. 15 of these (including 3 deaths) had a recent history of dental treatment with injections of procaine within the recognized incubation period for serum hepatitis. 30% of the patients in the hepatitis group had received dental treatment within the incubation period. In a matched age control group only 4.4% had received dental treatment during a like period of time.

Serum hepatitis is always differentiated from infectious hepatitis by history because of a lack of any test to separate the two. If the patient had received a blood transfusion during the last 6 months it may be assumed that he contracted the disease from infected blood.

Likewise if he received an injection of anesthetic solution or antibiotics while visiting a dentist, the dentist might have unknowingly transmitted the virus to the patient if he has not taken the proper preventive measures. This contention is supported by the fact that when a chi square test of the difference between the hepatitis and control group was calculated by the reviewer, a statistically significant difference was evident between the two groups. So one may assume that the observation that serum hepatitis may be traced to procaine injections by a dentist may be true. The transfer of the serum hepatitis virus between dental patients may be eliminated by autoclaving syringes, needles and other dental instruments. Chemical sterilizers and boiling for less than 30 minutes is ineffective in killing the virus.

WILLIAM F. VIA, JR.

RICHMOND, J. B., ED. Symposium on the child's mouth. Pediatric Clinics of North America, Philadelphia, Saunders, Nov. 1956, VII + 292 P.

This book was conceived and published to serve as an aid to the pediatrician in his diagnosis of oral conditions and the dentist in diagnosing systemic conditions reflected in the mouth. There are contributions from pediatricians, surgeons, psychiatrists, pedodontists, orthodontists, oral pathologists and oral surgeons.

Each chapter in the book deals with a specific aspect of a child's mouth. There is, however, an overall emphasis placed upon the integration of all the phases of study of the child's mouth in relation to the total health of the child.

The mouth of the newborn, examination of the mouth, oral infections, oral neoplasms, trauma, tongue problems, salivary gland infections, caries control, fractured incisors, cleft lip and palate represent examples of specific problems in diagnosis and treatment evaluated in various chapters.

"The Pediatrician's Responsibility in Dental Examination" and "The Orthodontist and the Pediatrician" are chapters demonstrating the necessity for a close interrelationship between the professions of medicine and dentistry in the treatment of children. A chapter regarding the psychological and psychophysiological aspects of oral activities reviews the normal psychological implications of a child's mouth as well as a discussion of abnormal oral habits and the importance of oral activities in healthy personality development.

This book may be highly recommended as a worthwhile addition to the library of all dentists who care for children in their practices.

WILLIAM F. VIA, JR.

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